Application Note
CTAN #218

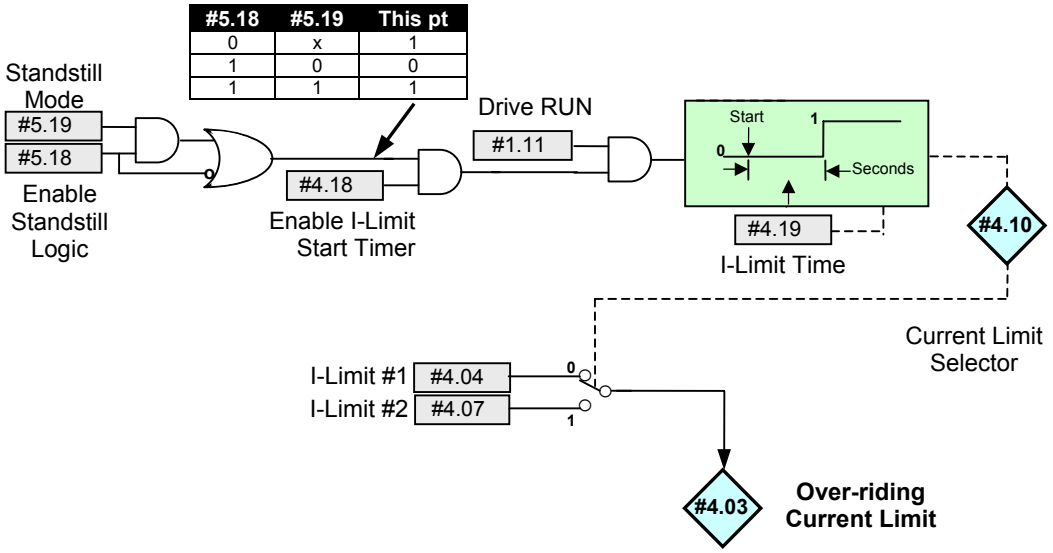
The Application Note is pertinent to the Quantum III / Mentor II Family

Creating a Starting Kick for Machine Breakaway Purposes

Like most of us, machines may need a bit of kick to get going. Machines need this little extra push because after sitting dormant for a while may develop some resistance to motion. We sometimes refer to this as static friction or "stiction" for short. A machine that possesses a high inertia may also benefit from an initial push to help get things moving. This application note will discuss a method to create a little kick to assist getting a machine going should it exhibit this tendency.

Implementation

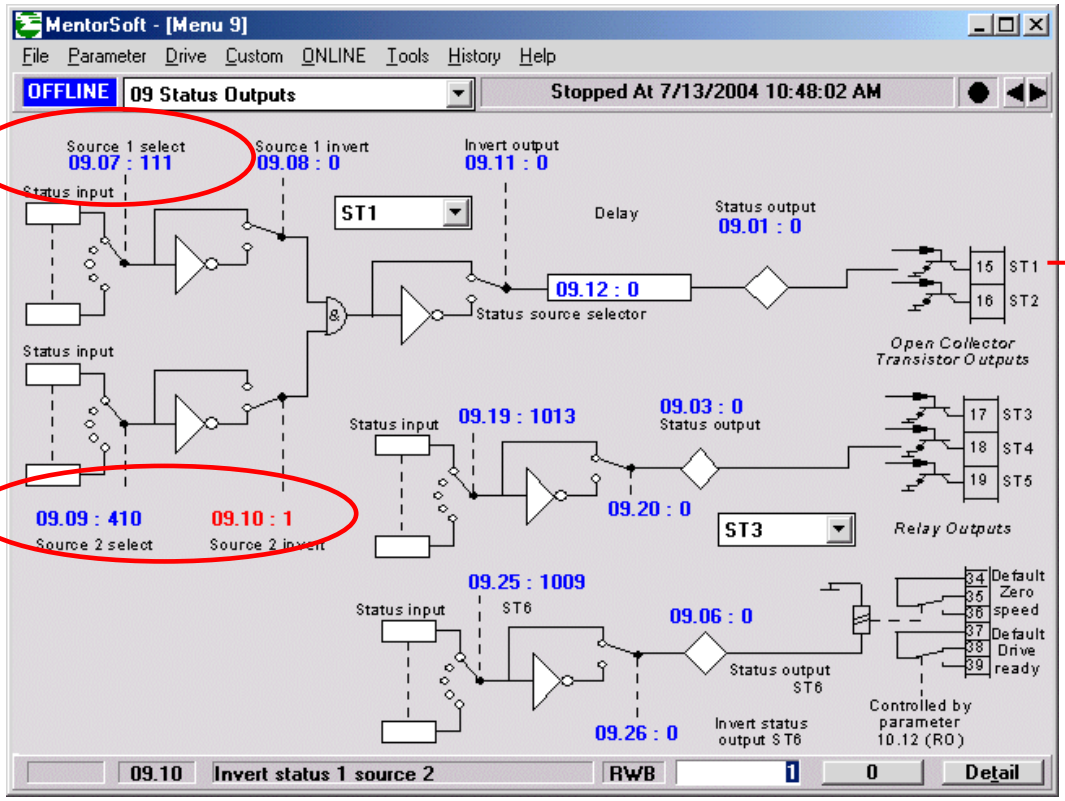
What we can do is use the built-in (rarely utilized) Current Limit Timer that occurs upon a Run request available in Menu 4.



When #4.18 is set to a 1 (and the Standstill logic is such that the point labeled "this pt" is a 1), parameter #4.10 will become a 1 after the time period set into #4.19 following a Start/Run command. Normally this is used to select between two current limits- namely I-Limit #1 and I-Limit #2. But if we set #4.04 and #4.07 =1000, then this function can be used for our own purposes without affecting the Drive in any way. This will be the method we will use to create our "kick" upon a Start Command.

For Quantum III #5.18 and #5.19 should be set to 1.

To accomplish this we will use one of the drives programmable AND gate outputs and wire it back into a programmable input to kick in an adjustable amount for the time set into parameter #4.19. For this application we would suggest setting #4.19 to 1 initially. Programmable output ST1 is free for use so we could make the assignments as shown below.



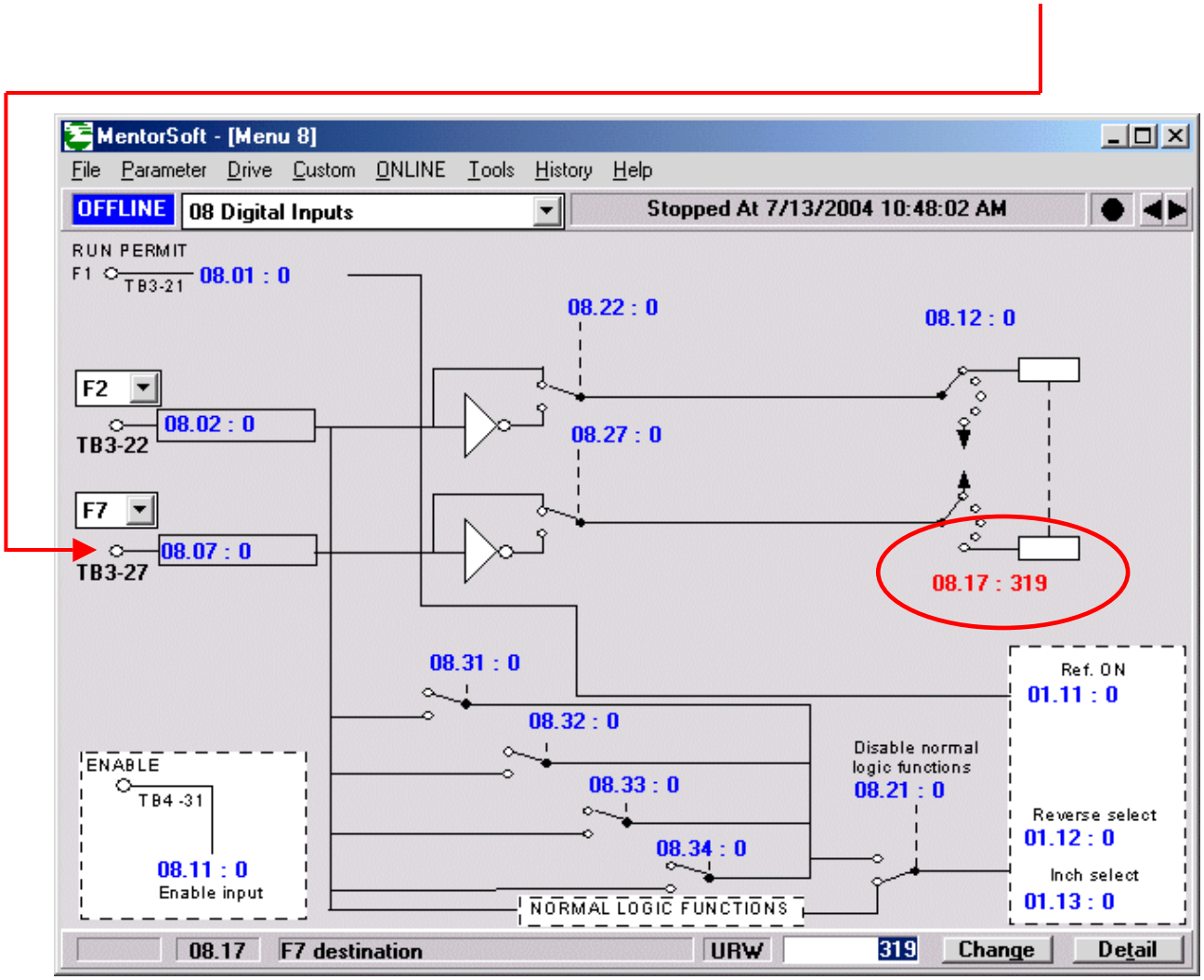
Start Pulse

Install jumper to a free programmable input

The diagram shown here are screen shots directly out of MentorSoft (available free from our website). These diagrams outline the scheme that would be used for Quantum III or Mentor II Drives to help you understand the configuration (should you wish to).

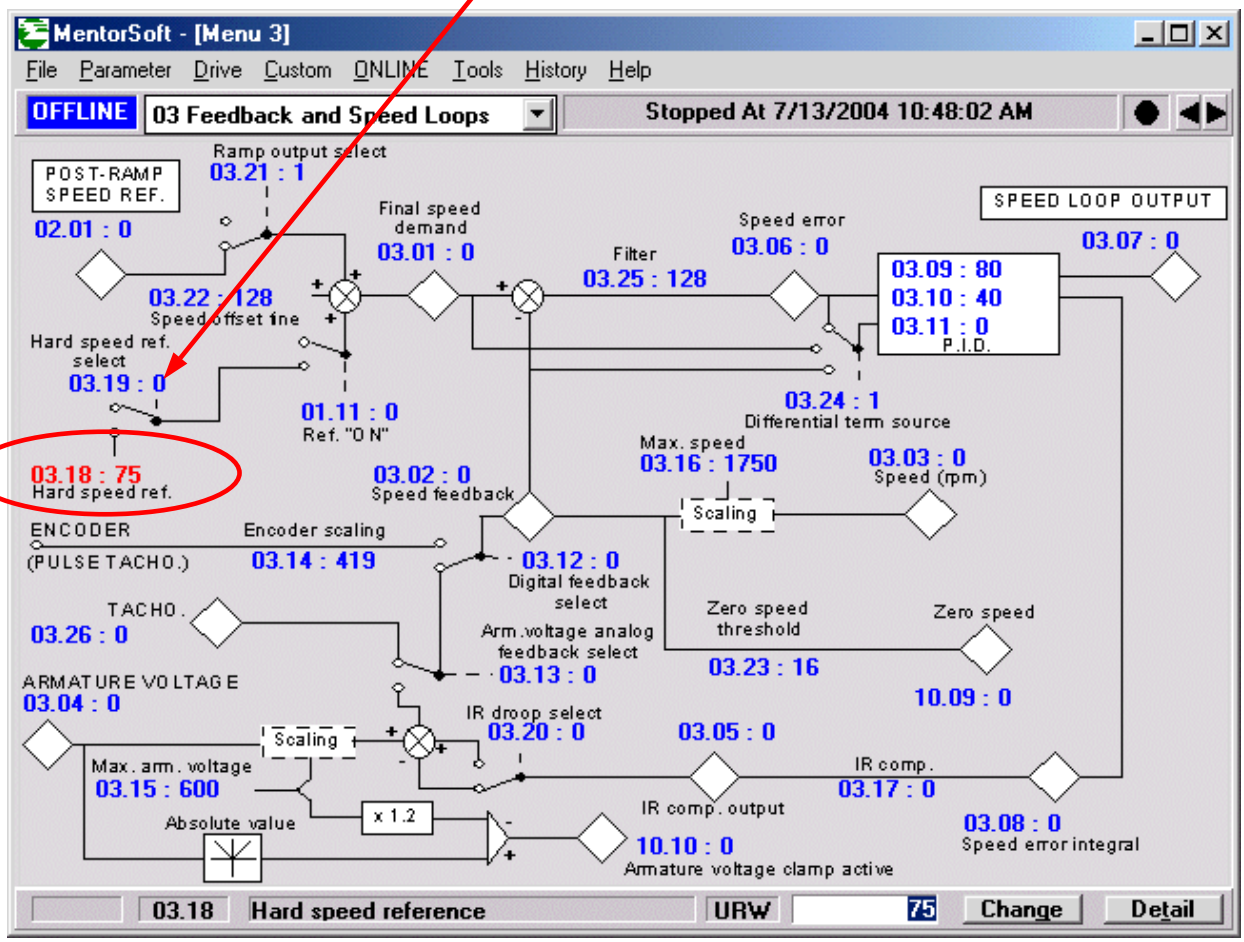
To obtain MentorSoft click on the link below:

www.emersonct.com/download_usa/software/Msoft224.exe



F7 is un-used in the Quantum III or Mentor II typically- so we can use that input and direct this input to switch in (via #3.19) an adjustable kick amount you would place into #3.18.

This switch will be set on during start for the time placed into #4.19



By directing #9.01 to #3.19, it will provide a direct kick to the speed loop of the magnitude placed into #3.18 for the duration set into #4.19. (Units of #3.18 are 1 to 1000 where 1000 is 100.0% speed.) Then upon expiration, #3.19 will return back to 0 (the state of #9.01 also) and therefore take the added amount away.

Note: It should be noted that a similar method could be employed that injects a "shot of current" by selecting #4.11 instead of #3.19 and placing the current injection amount into #4.09. Remember that current units placed into #4.09 are 1 to 1000 where 1000=150% drive amps. Other common corresponding values would be:

667=100% 333=50% 166=25% 66=10% 33=5%
of drive rated amps

For other applications of the Current Limit Timer see also

CTAN 167 Timed Starting Current
CTAN 198 Creating an "About to Start Warning

Questions ?? Ask the Author:

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