**The Application Note is pertinent to the Mentor II / Quantum III
Unidrive Classic, Unidrive SP and SE Family**

Programmable Time Delays
within Control Techniques Drives

Built-in to the Mentor II/Quantum III & Unidrive products are 2 sets of Programmable Logic Gates. In addition, each logic gate has a programmable time delay output.. This article was created to promote the understanding and application of these built-in Time delays.

For additional info one could refer to Menu 9 block diagrams for these drives
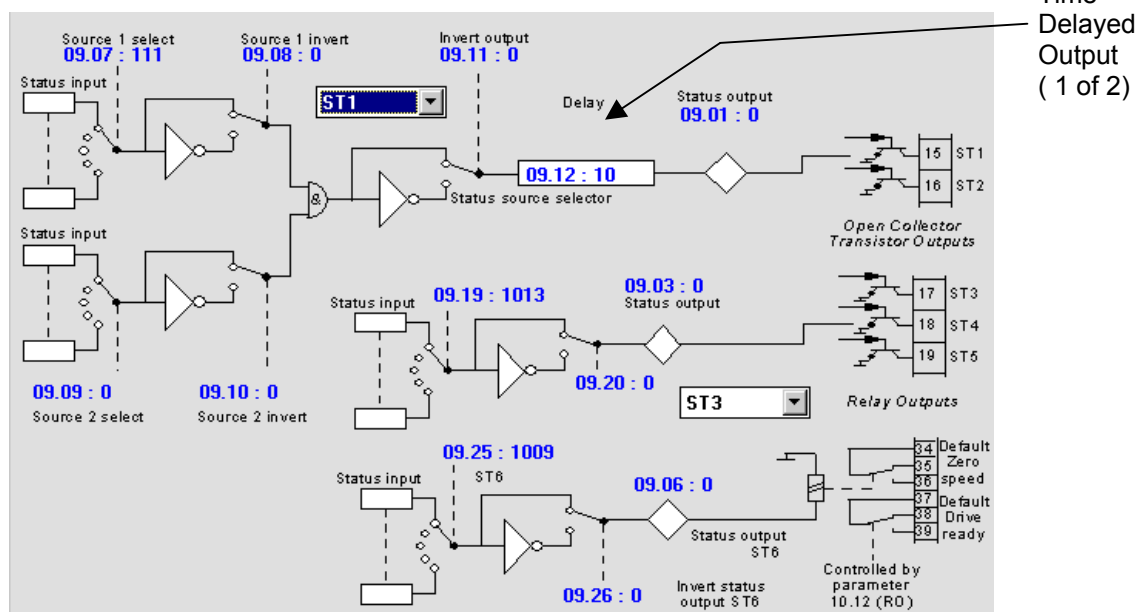
The output delay functions will produce an output from a logic "high" input after the time delay setting.

Time Delay Range

For Mentor II/Quantum III these delays can range form 0-255 seconds.

For Unidrive these delays can range from 0-25 seconds.

For the Commander SE the delay can range from 0-25.0 seconds in tenths of seconds.

For Unidrive SP these delays can range from 0-25.0 seconds.

Figure 1 illustrates the time delay action basic on the logic high input. Note that transitions of "high to low" are immediate.
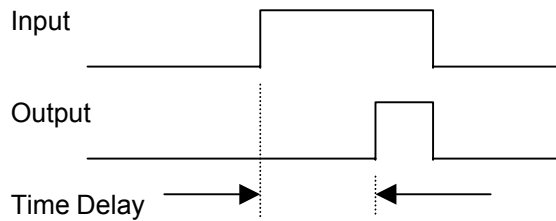
Input

Output

Time Delay

Fig. 1

Figure 2 illustrates that input transitions shorter than the time delay will be "masked".   This could have application in "debouncing" a comparator (without hysteresis) that is just hovering past a threshold setting.
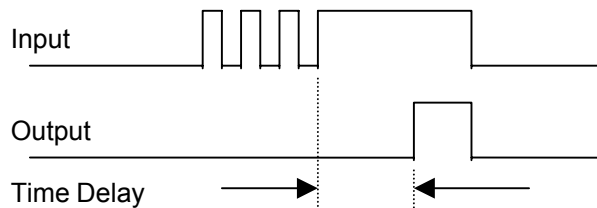
Input

Output

Time Delay

Fig. 2

For a practical example of how one might use the logic gates on menu 9 with time delay, suppose you had a need to know if the motor was in a "stalled condition".   The criteria for this determination might be:

                        STALLED = AT ZERO SPEED and IN CURRENT LIMIT
        or   **STALLED** = AT ZERO SPEED and CURRENT > SOME AMOUNT

In either case, during a quick start the Drive would be At Zero Speed and delivering a high current. A simple **AND** might create a momentary output at start. So this calls for the AND condition to exist for perhaps 3 seconds before we've reached the conclusion that the motor is indeed STALLED. This is where the Time Delay function would become useful.

For more information on how to use the Internal Logic Gates consult the following CTAN140 & 141

www.emersonct.com/pdProducts/downloads/appNotesPDF/ctan140.pdf
www.emersonct.com/pdProducts/downloads/appNotesPDF/ctan141.pdf
Click on the above links

Other Application Examples

These embeded timers can be useful in creating a conditional Flashing Indicator light or audible alarm output. See CTAN210 for details. Click on the following link

www.emersonct.com/pdProducts/downloads/appNotesPDF/ctan201.pdf

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