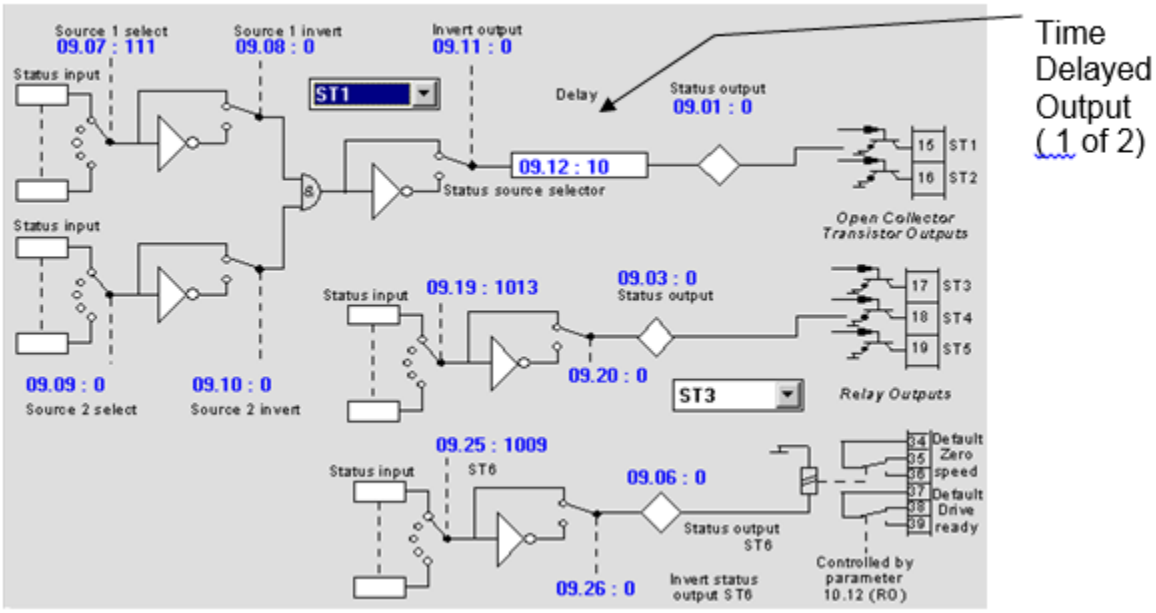
The Application Note is pertinent to the Mentor II / Quantum III Unidrive Classic, Unidrive SP and SE Family

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 from 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.

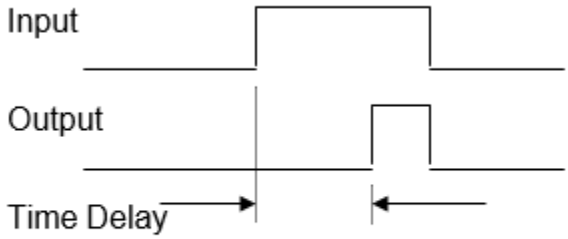


Fig. 1

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.

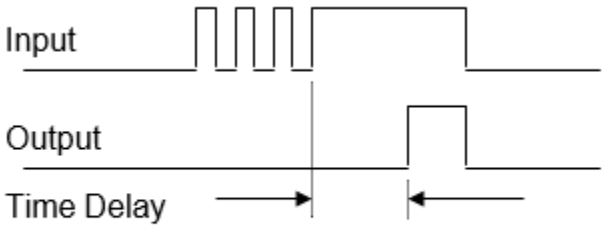


Fig. 2

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.

Resources: can be found on our website: www.controltechniques.com
For help contact techsupport.cta@mail.nidec.com, or
call Technical Support at 952-995-8000, 24/7/365