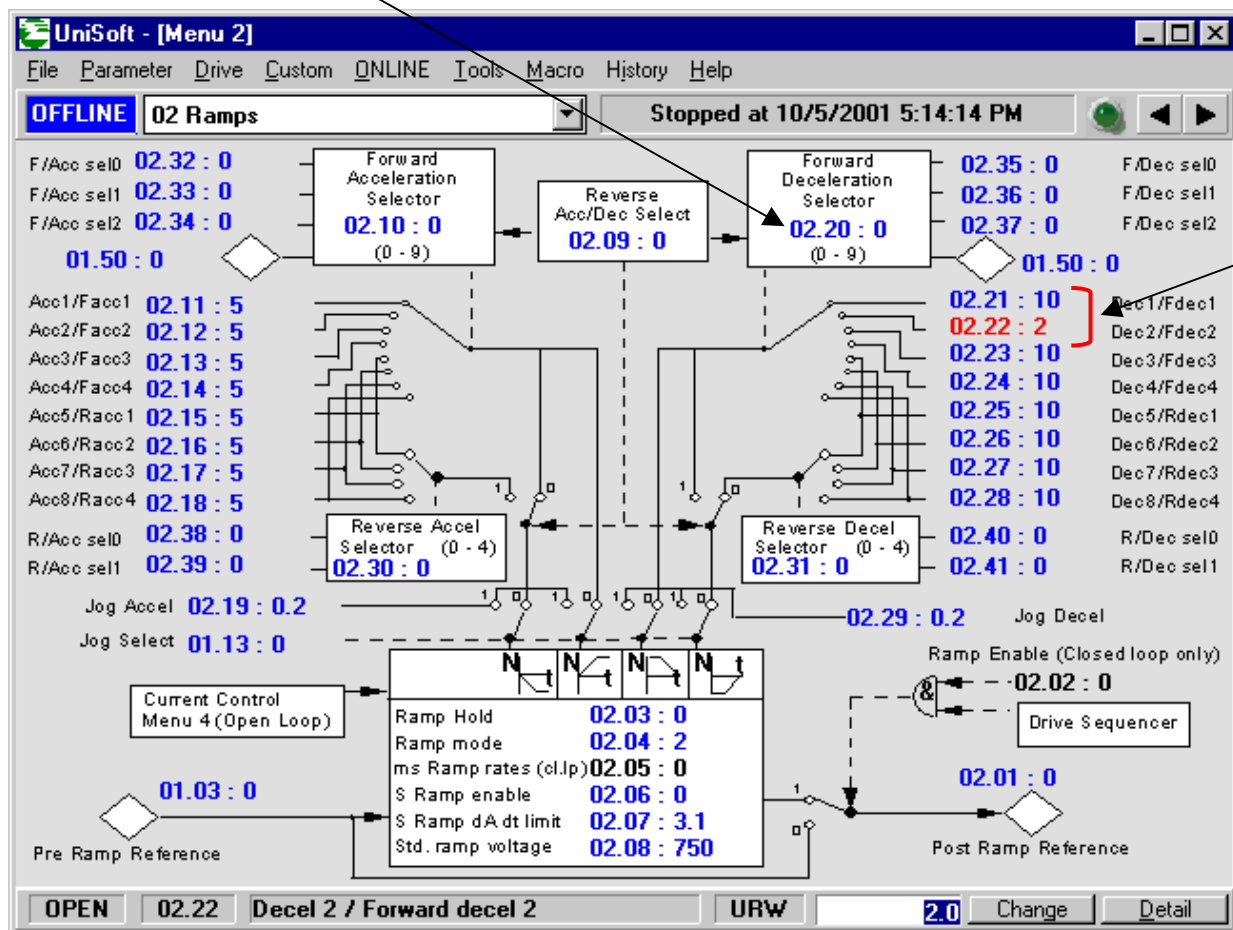


The Application Note is pertinent to the Unidrive Family

Dual Stopping Rates

Quite often there is a need for 2 deceleration rates when using motor drives. Usually there is a normal stop rate and the need for an occasional fast or quick decel stopping rate. This application note will address how one might create dual stopping rates.

On a Stop command the drive will ramp to stop using the default decel rate which is contained in parameter #2.21 (decel rate #1). You can refer to the diagram of Menu 2 shown below. There 8 decel rates available. We could elect to use Decel #2 or #2.22 for our alternate rate, but how can it be selected? Obviously, we will need an input to tell the drive when to use this alternate rate. This can be accomplished if we can change the position of the deceleration rate selector- #2.20.



Since there are 8 decel rates, 3 control lines could select any one of 8. If we investigate the properties of the Decel Reference Selector #2.20 we find a truth table describing which decel rate is selected per each of the 3 controlling inputs (bits) to the #2.20 selector.

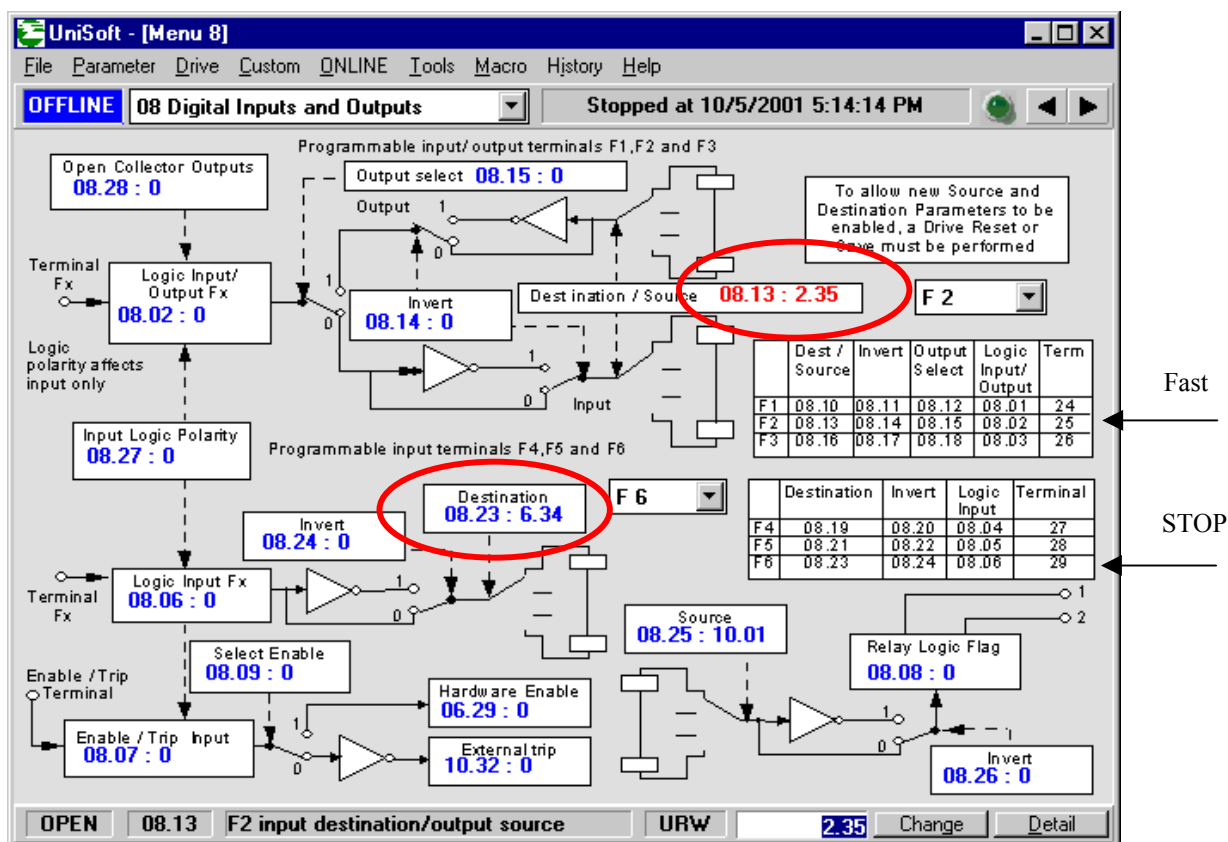
These bits are for control by digital inputs such that ramp rates can be selected by external control. The ramp rate selected depends on the binary code generated by these bits as follows:

Ramp Rate

2.37	2.36	2.35	Selected
0	0	0	1
0	0	1	2
0	1	0	3
0	1	1	4
1	0	0	5
1	0	1	6
1	1	0	7
1	1	1	8

← Normal
← Fast

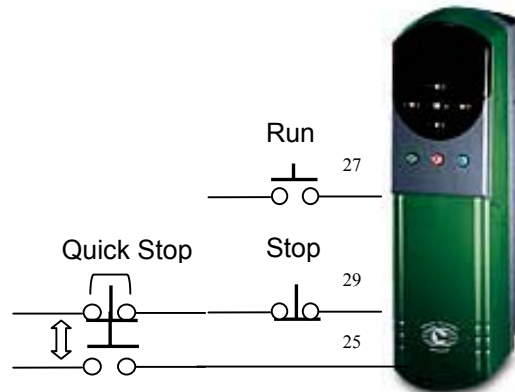
So from the table above, if we could make #2.35 become a 1, we can get another decel rate. We will be leaving #2.36 and #2.37 alone (0) If we assign one of the unused programmable inputs to control #2.35, we'll just about have it. Since I was not using pin 25 (Reset) on my drive for anything else I chose it to become the Fast Stop input.



To obtain this program shown above and information on how to use it
click here-> [CTAN182](#)

Physical Connections

The hookup below uses sequencing mode 0 (#6.04=0). This permits a momentary Run contact to cause the Drive to go into the Run Mode and either of the Stop buttons will unlatch the Run condition. The key to having a dual Stop rate is having the additional contact block on the **Quick Stop** pushbutton. The button shown here is the **Push-in/ Pull Out** type that will maintain the closure on the NO (normally open) block when **Quick Stop** is commanded thereby maintaining the selection of the second decel rate which we have designated as our Fast rate. For normal Stop, our Fast rate (pin 25) will not be selected thereby selecting the normal Stop rate setting in parameter #2.21. We would place our Fast Stop rate in parameter #2.22.



Note: To achieve fast decel rates, the mechanical energy of motion is converted to electrical energy by motor/generator action. This regenerative energy will cause the DC Bus within the drive to rise and possibly exceed its' internal limits and result in an OV (Overvoltage) trip. In this case, a **DB** (dynamic braking) resistor can be applied to absorb and dissipate this excess energy.

When DB is applied it is necessary to set the Ramp Mode #2.04= FAST . In general, the Stop Mode #6.01 would be set for RAMP.

For E-Stop Duty DB Resistors consult : **DB Resistors**

For DB Resistor Protection consult: **CTAN192**

Note: This application note does not intend to imply that this method can be used to satisfy the Industrial Standards concerning the definition of **EMERGENCY STOP**. One should consult OSHA or other machine safety standards concerning **EMERGENCY STOP** and the required criteria.

Questions ?? Ask the Author:

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