

PositionServo Sample Program - Basic Internal Torque Mode

Concept:

This sample program is a basic example of how to use the PositionServo in 'Internal Torque Mode'.

The program uses only the Enable Input on A3 to cause the drive to start / stop. This is not recommended practice but it is adequate to simply demonstrate Internal Torque Mode.

The PositionServo is placed in Torque mode with internal reference through the relevant variables at the start of the program.

The program will cause motor torque to gradually increase until the nominal motor current (entered through MotionView) is reached. When nominal motor current is reached the program will reset torque (current) to zero and repeat the process. A Torque Profile similar to that shown in Figure 1 is produced.

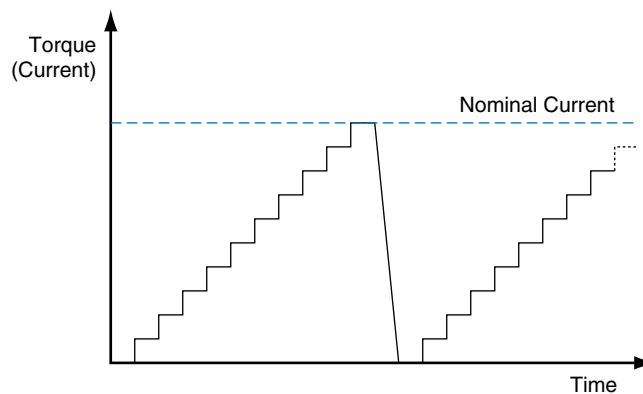


Figure 1: Torque Profile

The size (increase) in each Torque Step and the time between steps is defined in the following code, and can be altered by the programmer.

```
Define Torque_Step 0.1           ; Defines Steps in Amps for Increase in Torque
Define Step_Time 500             ; Define Time Between Step Increases in Torque
```

The drive will continually execute this code loop until the drive enable is switched off.

While in Internal Torque mode the Torque reference is written to the IREF (Internal Reference) variable in Amps.

No events or subroutines are used in this example.

Motor Mechanics:

For the purpose of the demonstration a fairly low torque motor should be used with a disc fitted to the motor shaft so that the user can hold the shaft and feel the Torque increase.

Fault Handling:

In the event of a fault, the code will simply be restarted. The operator must switch the drive enable off and on again for the Torque increase loop to restart.

I/O:

IN_A3: Safety Enable / stop - Connected to machine safety Guards / Devices

Connection:

Figure 2 illustrates the P3 terminals that need to be connected for this example to work.

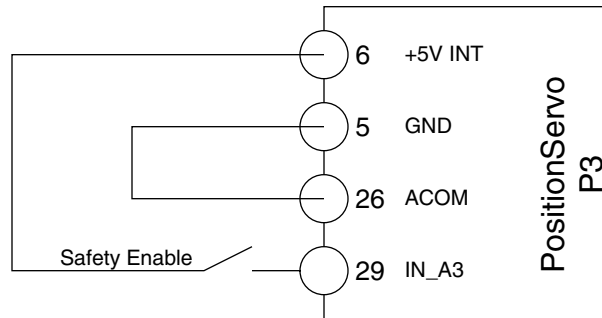


Figure 2: Connection Diagram- Basic Internal Torque

Example Program:

The program code is color-coded for quick recognition of the various parts of the indexer program. The color coding is not in accordance with, or representative of, any national or international standard.

```

;***** PositionServo User Indexing Program *****
;***** Header *****
;Title      :      PositionServo Training Basic Internal Torque Example Program
;Author     :      AC Technology International Ltd
;Description :      Program slowly Increases Motor Torque until Nominal motor Curent is Reached
;           :      Program then resets Torque to 0 and Repeats Cycle
;Version Number :      V1.0.0
;Date       :      01/03/07
;
;***** I/O List *****
;   Input A1 -      not used
;   Input A2 -      not used
;   Input A3 -      Safety stop
;   Input A4 -      not used
;   Input B1 -      not used
;   Input B2 -      not used
;   Input B3 -      not used
;   Input B4 -      not used
;   Input C1 -      not used
;   Input C2 -      not used
;   Input C3 -      not used
;   Input C4 -      not used
;
;   Output 1 -      not used
;   Output 2 -      not used
;   Output 3 -      not used
;   Output 4 -      not used
;
;   Analog In 1 -   not used
;   Analog In 2 -   not used
;   Analog Out  -   not used
;
;   Encoder Out -   not used
;
;
;
;

```

```

;***** Events *****
;Event Code Section
;Event

;Endevent

;***** Initialize and Set Variables *****
; Define Constants and Variables. Assign I/O and Initialize Variable Values

Define Torque_Step 0.1           ; Defines Steps in Amps for Increase in Torque
Define Step_Time 500             ; Defines Time Between Step Increases in Torque

Var_DriveMode = 0                ; Set Drive to Torque Mode
Var_Reference = 1                ; Set Reference to Internal Control

;***** Main Program *****

Program_Start:
Wait While In_A3                 ; Wait While Enable Input is on (fault recovery)
IREF = 0                          ; Reset Torque Reference to 0 (Amps)
Wait While !In_A3                ; Wait While Enable Input is off
Enable                            ; Enable Drive

Torque_Loop:
Wait Time Step_Time              ; Wait time Between step Increases in Torque, Defined Above
If IREF < Var_CurrentLimit       ; If Set Toque is Less than Motor Nominal Torque
    IREF = IREF + Torque_Step     ; Then Increase by Step Value Defined Above
    Goto Torque_Loop              ; Loop to next Torque Increase
Else
    IREF = 0                      ; Reset the Internal Torque Reference to 0 (Amps)
    Goto Torque_Loop              ; Restart the Torque Increase Loop
EndIf
END                                ; End Code - Never Reached

;***** Sub-Routines *****
;   Enter Sub-Routine code here

;***** Fault Handler Routine *****
;   Enter Fault Handler code here
ON FAULT

    Resume Program_Start          ; Jump back to Program Start.
ENDFAULT

```