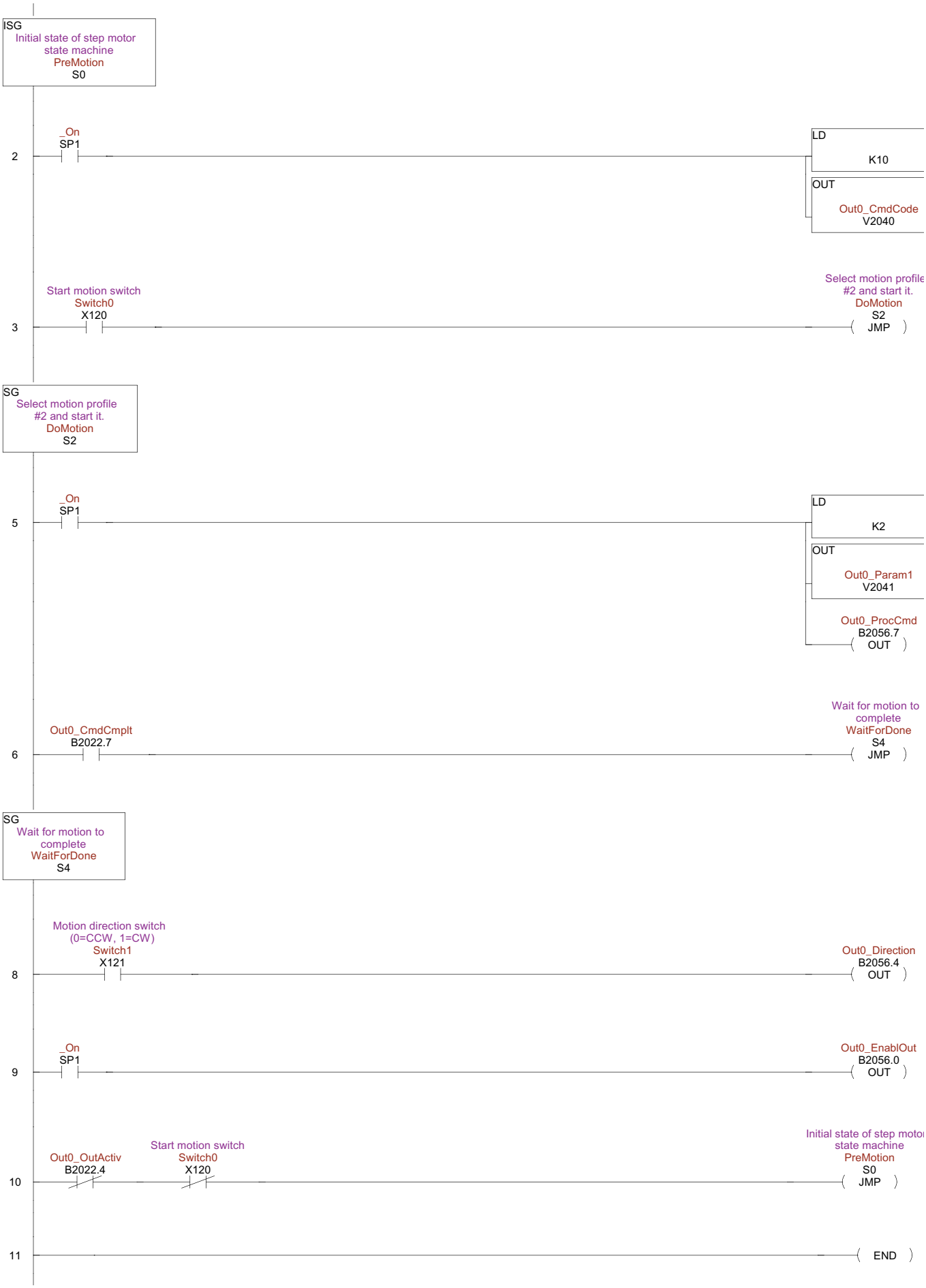
Driving Step Motors with DL06-CTRIO

Steps to using the CTRIO module to control step motors:

1. Wire the CTRIO to step motor amplifier
    a. Y0 to STEP-
    b. Y1 to DIR-
    c. STEP+ to a 2200ohm resistor which connects to +24V
    d. DIR+ to another 2200ohm resistor which connects to +24V

2. Run CTRIO WorkBench - Directsoft PLC
    a. Do “Config I/O”, set to Pulse Step/Direction
    b. Do “I/O Map”
        1) Check “Enable Write to PLC”
        2) Use V2000 as address for inputs
        3) Check “Enable Read from PLC”
        4) Use V2030 as address for outputs
    c. Create “Pulse Profiles”
        1) Add a profile
            - usually use trapazoidal or S-curve
            - set up appropriate parameters for acceleration, velocity, and number of pulses (keeping in mind steps/rev of motor amplifier)
            - name your profile
        2) Add additional profiles as needed
    d. Click “Write Module” (if “Write Module” is grayed out, click “Goto PROGRAM”)
    e. Click “Goto Run”

3. Setup your PLC logic
    a. Write “load table” command (K10) to V2040
    b. Load profile table number into V2041
    c. Be sure direction bit (B2056.4) is 0 or 1 as appripriate
    d. Set output enable bit (B2056.0) to 1. Your motor should turn.
    e. Wait until output active bit (B2022.4) goes inactive (motion complete)


ISG
Initial state of step motor state machine PreMotion
S0
2
_On
SP1
LD
K10
OUT
Out0_CmdCode
V2040
3
Start motion switch
Switch0
X120
Select motion profile #2 and start it.
DoMotion
S2
JMP
SG
Select motion profile #2 and start it.
DoMotion
S2
5
_On
SP1
LD
K2
OUT
Out0_Param1
V2041
Out0_ProcCmd
B2056.7
OUT
6
Out0_CmdCmplt
B2022.7
Wait for motion to complete
WaitForDone
S4
JMP
SG
Wait for motion to complete
WaitForDone
S4
8
Motion direction switch
(0=CCW, 1=CW)
Switch1
X121
Out0_Direction
B2056.4
OUT
9
_On
SP1
Out0_EnablOut
B2056.0
OUT
10
Out0_OutActiv
B2022.4
Start motion switch
Switch0
X120
Initial state of step motor state machine
PreMotion
S0
JMP
11
END

Step Motor Exercise

Create PLC logic and step motor motion profile to move when switch0 (X120) is turned on. If switch1 (X121) is off, then the move should be 30 degrees. If X121 is on, then the move should be 120 degrees. Use switch2 (X122) to set the direction of motion.