Using Digital Inputs for Binary Selection to Control Program Flow

Example program: "..\QuickControl\QCI Examples\Using Inputs for Move Selection\"

- 3 Inputs 7 Programs.qcp"

The following document describes an application using digital inputs to start multiple programs. In particular, 3 inputs will be used to start 7 programs. Each of these programs could be as simple (i.e. a single move) or as complex as the user requires.

Key Notes

- There is a 100 ms debounce that allows the switches time to settle.
- The inputs' initial state is designated as normally closed, NC (logic "0"), as on contact closures.

3 Inputs 7 Programs.qcp

The example program will continually scan all three inputs, waiting for any of them to open [logic high state, "1"] or close [logic low state, "0"].

The table below describes the move that will be selected for each combination of digital inputs.

	SWITCH 3	SWITCH 2	SWITCH 1	Move that will be triggered
MOVE 1	closed	closed	**opened**	Initiate Program 1: MRV 1 Revolution
MOVE 2	closed	**opened**	closed	Initiate Program 2: MRV 2 Revolutions
MOVE 3	closed	**opened**	**opened**	Initiate Program 3: MRV 3 Revolutions
MOVE 4	**opened**	closed	closed	Initiate Program 4: MRV 4 Revolutions
MOVE 5	**opened**	closed	**opened**	Initiate Program 5: MRV 5 Revolutions
MOVE 6	**opened**	**opened**	closed	Initiate Program 6: MRV 6 Revolutions
MOVE 7	**opened**	**opened**	**opened**	Initiate Program 7: MRV 7 Revolutions
WAIT	closed	closed	closed	Initiate Wait Program

Table 1: The digital input combinations for 3 switches

MAIN PROGRAM [0]: This program scans the digital input states to determine which program to call next. The Jump On AND I/O State command (JAN) is used to determine the state of the I/O. This command uses the logical expression AND, meaning that all inputs included must match the current state, e.g. State #7 – 111 indicates that I/O #1, I/O #2, and I/O #3 must be at a logic high state. See program for details.

QuickSilver Controls, Inc.

WAIT [1]: This program waits for the input states to settle before calling their corresponding routines. The state with all inputs low is identified as the stop state, State #0 - 000. The stop state is checked once. A Delay command (DLY) is then issued to provide some time between commands. The stop state is checked once more to verify any false triggering from noise. Finally, the LRP command is called again returning back to the Main Program. See program for details.

PROGRAM 1 [2] – PROGRAM 7 [8]: These are the programs which instruct the servo to move. Note, these simple programs could be replaced with more complex routines.