Document Reference: AN060015H2

H2 Preset Postioning Software Setup

Required Equipment:

H2 Vector (Encoder Feedback)
H2 Servo (Resolver Feedback)

Introduction:

The H2 closed loop vector and H2 servo drive is capable of providing up to 15 preset position moves, which is an ideal feature for indexing applications. The following list details this feature.

- There are 14 preset positions scaled to the motor feedback or quadrature counts. These positions are selected by using four digital inputs J2-11 through J2-14.
- Six positions are absolute moves. Absolute moves are referenced to the zero or home position if no homing offset is used.
- Eight positions are incremental moves. Incremental motion adds or subtracts from the current position.
- One digital input (J2-15) selects between two sets of acceleration/deceleration parameters to also include two different sets of s-curves.
- Two inputs (J2-9 and J2-10) are used as a forward and reverse enable.
- One input (J2-8) is used to trigger or start a move.
- One input (J2-16) has two possible functions. The first is if the EXTERNAL TRIP parameter is turned ON. In this case when the input is opened the drive will fault with a coast to a stop and then display and log an “External Trip” message. If the EXTERNAL TRIP parameter is turned OFF then the input will act as quit switch. When it is opened the drive will stop its current move with a controlled stop. When the input is closed the move will continue.
- There is a digital output selection that will close the digital output if a move is “In Motion”. This means the current motor shaft position is not at the selected position.
- Another digital output selection is the “At Position”. This will close when the motor shaft is at the selected position.
- Closing all four position select switches will reset any faults on the drive and also reset the position counter to zero in the drive.

Procedure:

Step 1: To use the preset position feature you will need to first connect the drive as shown in figure 2.

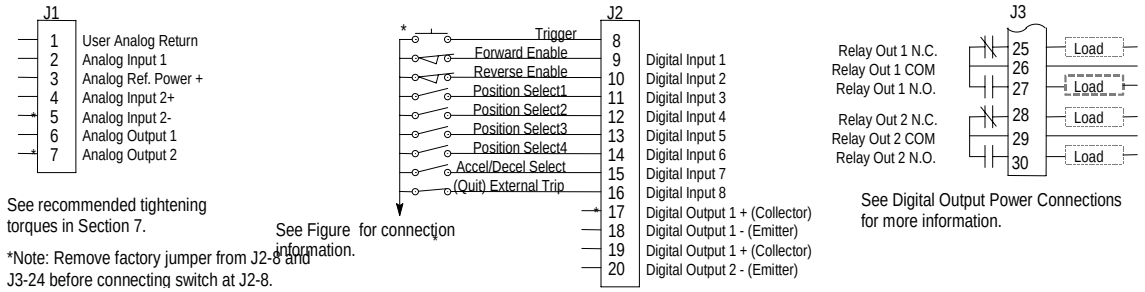

Figure 2.

Step 2: When configuring the drive set LEVEL 1: INPUT SETUP: OPERATING MODE to “15 Preset Positions”.

Step 3: Set the acceleration/deceleration times.

Step 4: Program digital outputs per customer needs. Most likely the “In motion” and “At Position” selections will be used.

Step 5: Program preset position parameters in LEVEL 3: PRESET POSITION. These will be set in revolutions and quadrature counts. The preset position parameters have two sets of numbers separated by a colon, **:** . The format will look like this “0000 : 0000”. The number to the left of the colon is set in revolutions the number to the right is set in quadrature counts. Encoders are built with a certain number of counts per revolution. A common number is 1024 counts per revolution or 1024ppr. In reality there are actually four times that number of counts on a quadrature encoder. So a 1024ppr encoder will have 4096 counts per one revolution. To program a preset position to go 10 and a half revolutions the parameter would be set to “0010 : 2048”.

Step 6: Close terminal J2-9 to allow forward moves and close J2-10 to allow reverse moves.

Step 7: Select a move using a combination of digital input J2-11, J2-12, J2-13, and J2-14. Refer to table 1 for specific moves.

Table 1.

J2-11	J2-12	J2-13	J2-14	Move Type	Function
Open	Open	Open	Open	Forward Move	Home
Closed	Open	Open	Open	Absolute	Selects level 3:Preset Position:Preset POS 2
Open	Closed	Open	Open	Absolute	Selects level 3:Preset Position:Preset POS 3
Closed	Closed	Open	Open	Absolute	Selects level 3:Preset Position:Preset POS 4
Open	Open	Closed	Open	Absolute	Selects level 3:Preset Position:Preset POS 5
Closed	Open	Closed	Open	Absolute	Selects level 3:Preset Position:Preset POS 6
Open	Closed	Closed	Open	Absolute	Selects level 3:Preset Position:Preset POS 7
Closed	Closed	Closed	Open	Incremental	Selects level 3:Preset Position:Preset POS 8
Open	Open	Open	Closed	Incremental	Selects level 3:Preset Position:Preset POS 9
Closed	Open	Open	Closed	Incremental	Selects level 3:Preset Position:Preset POS 10
Open	Closed	Open	Closed	Incremental	Selects level 3:Preset Position:Preset POS 11
Closed	Closed	Open	Closed	Incremental	Selects level 3:Preset Position:Preset POS 12
Open	Open	Closed	Closed	Incremental	Selects level 3:Preset Position:Preset POS 13
Closed	Open	Closed	Closed	Incremental	Selects level 3:Preset Position:Preset POS 14
Open	Closed	Closed	Closed	Incremental	Selects level 3:Preset Position:Preset POS 15
Closed	Closed	Closed	Closed	Position Reset	Position and fault reset

Step 8: Select desired acceleration/deceleration rates using J2-15. The actual rates are programmed in LEVEL 1: RAMP RATES.

Step 9: To start a move momentarily close J2-8. This action will trigger the selected move. During this move the digital output that is set to “In Motion” will close.

Step 10: The motor will then move to the selected position. Once the position is reached the “In Motion” output will open and the “At Position” output will close.

Table 2 gives a summary of the digital inputs and outputs.

Table 2.

J2 Terminal	Function	Description	
Input 8	Motion trigger	Rising edge	
Input 9	Forward Enable	Allows travel in the forward direction	
Input 10	Reverse Enable	Allows travel in the reverse direction	
Input 11 Input 12 Input 13 Input 14	Preset Position Move Select.	See Table 1.	
Input 15	Accel/Decel Select	Open	Selects Accel/Decel group 1
		Closed	Selects Accel/Decel group 2
Input 16	External Trip or Quit	Open	Drive faults or Quits
		Closed	Drive runs normally
Output #	At Positon	Open	When new trigger is given and motor is moving.
		Closed	When motor is at commanded position
Output #	In Motion	Open	When a new position is reached and motor is stopped
		Closed	When a new trigger is given and the new position has not been reached.

Figure 2 is a sample timing diagram of a forward incremental move and reverse incremental move.

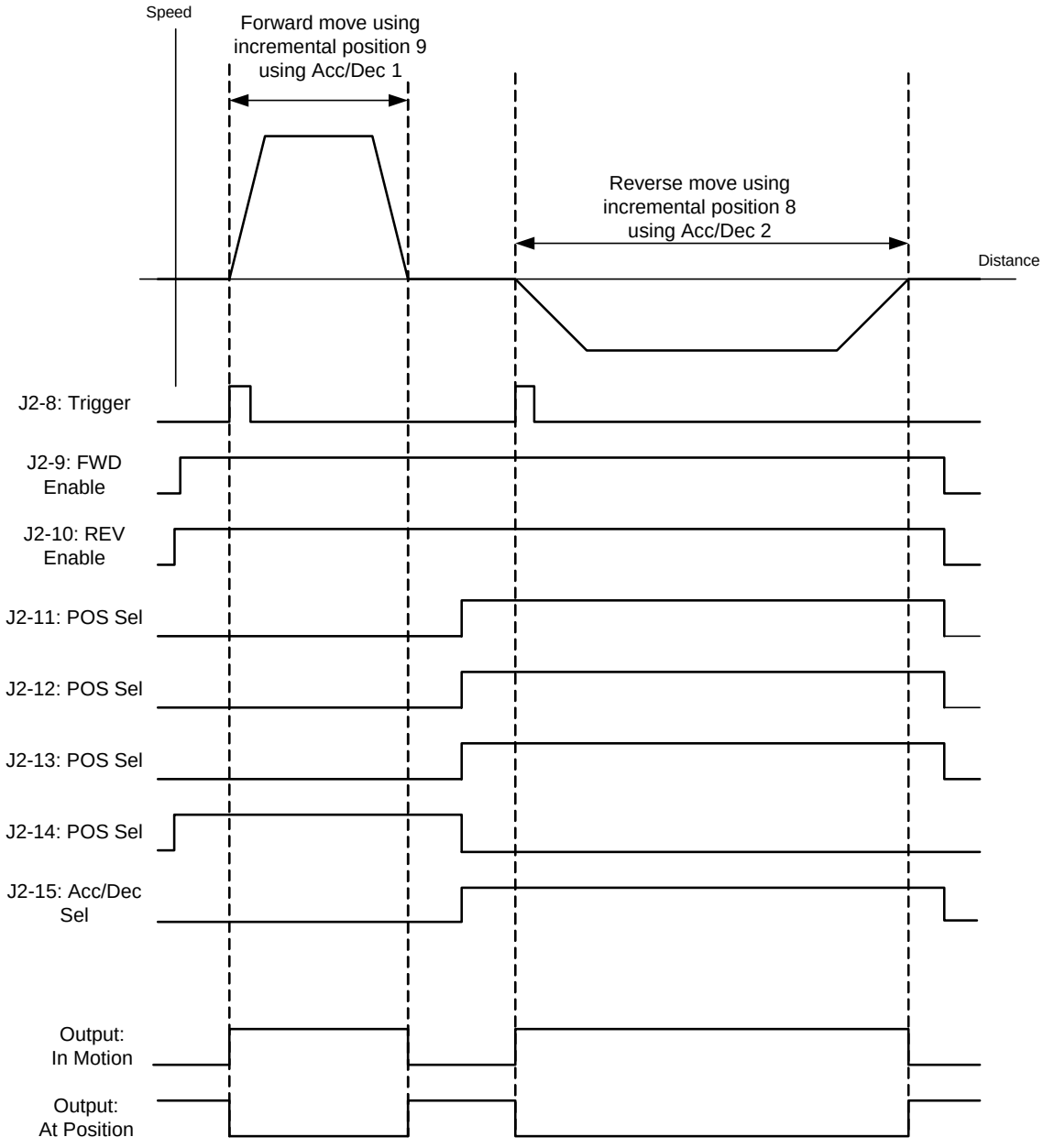

Figure 2.