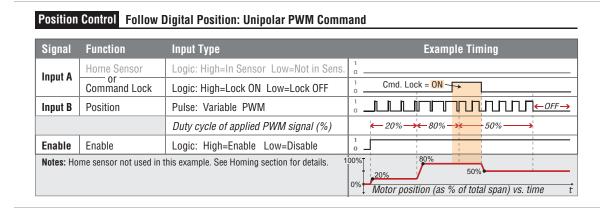# FOLLOW DIGITAL POSITION COMMAND: UNIPOLAR PWM COMMAND

MODE DESCRIPTION

Available on

MCPV

ClearPath will servo to a position between two user-defined limits proportional to the PWM duty cycle of the signal on input B.

Position Control	Follow Digital Position: Unipolar PWM Command		
Signal	**Function**	**Input Type**	**Example Timing**
Input A	Home Sensor — or — Command Lock	Logic: High=In Sensor Low=Not in Sens.	
		Logic: High=Lock ON Low=Lock OFF	Cmd. Lock = ON
Input B	Position	Pulse: Variable PWM	←OFF→
		Duty cycle of applied PWM signal (%)	← 20% → ← 80% → ← 50% →
Enable	Enable	Logic: High=Enable Low=Disable	
Notes: Home sensor not used in this example. See Homing section for details.			*Motor position (as % of total span) vs. time*

I/O FUNCTIONS

Enable Input - Asserting this input energizes the motor shaft.

Input A - Asserting this input will make ClearPath continue to servo to its current position regardless of any changes to the duty cycle on Input B. Alternatively, this signal can be used as a home sensor input.

Input B - This input is connected to a PWM signal whose duty cycle represents the desired position.
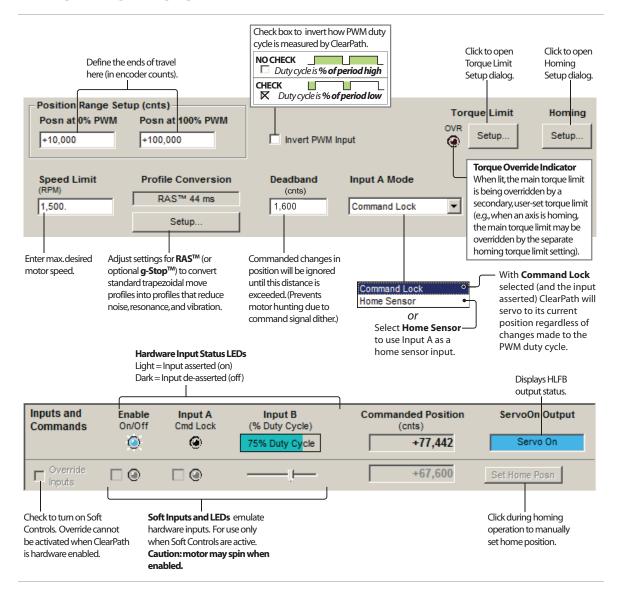
Output (HLFB) - See HLFB section for available modes.

Notes:

- A loss of modulation (meaning Input B has no transitions for more than 50 ms) is considered an error condition, and ClearPath will maintain its current position.
- A duty cycle of nearly 0% or 100% (with a state transition at least every 50 ms) will command ClearPath to move to position 0 or position 1, respectively.
- A duty cycle between 0% and 100% will command a position proportionally between position 0 and 1.
- PWM input frequency range: 20 Hz to 30 kHz.

MODE CONTROLS

Define the ends of travel here (in encoder counts).

Check box to invert how PWM duty cycle is measured by ClearPath.

NO CHECK
☐ Duty cycle is **% of period high**

CHECK
☒ Duty cycle is **% of period low**

Click to open Torque Limit Setup dialog.

Click to open Homing Setup dialog.

Position Range Setup (cnts)

Posn at 0% PWM: +10,000

Posn at 100% PWM: +100,000

☐ Invert PWM Input

Torque Limit
OVR
Setup...

Homing
Setup...

Torque Override Indicator
When lit, the main torque limit is being overridden by a secondary, user-set torque limit (e.g., when an axis is homing, the main torque limit may be overridden by the separate homing torque limit setting).

Speed Limit (RPM): 1,500.

Profile Conversion: RAS™ 44 ms — Setup...

Deadband (cnts): 1,600

Input A Mode: Command Lock

Enter max. desired motor speed.

Adjust settings for **RAS™** (or optional **g-Stop™**) to convert standard trapezoidal move profiles into profiles that reduce noise, resonance, and vibration.

Commanded changes in position will be ignored until this distance is exceeded. (Prevents motor hunting due to command signal dither.)

Command Lock
Home Sensor

or
Select **Home Sensor** to use Input A as a home sensor input.

With **Command Lock** selected (and the input asserted) ClearPath will servo to its current position regardless of changes made to the PWM duty cycle.

Hardware Input Status LEDs
Light = Input asserted (on)
Dark = Input de-asserted (off)

Displays HLFB output status.

Inputs and Commands	Enable On/Off	Input A Cmd Lock	Input B (% Duty Cycle)	Commanded Position (cnts)	ServoOn Output
			75% Duty Cycle	+77,442	Servo On
☐ Override Inputs	☐	☐	——┃——	+67,600	Set Home Posn

Check to turn on Soft Controls. Override cannot be activated when ClearPath is hardware enabled.

Soft Inputs and LEDs emulate hardware inputs. For use only when Soft Controls are active. **Caution: motor may spin when enabled.**

Click during homing operation to manually set home position.

FOLLOW DIGITAL POSITION COMMAND: FREQUENCY COMMAND

MODE SUMMARY

Available on

MCPV

ClearPath will servo to a position between two user-defined limits based on the frequency of the signal on Input B.

Position Control Follow Digital Position: Frequency Command

Signal	Function	Input Type	Example Timing
Input A	Home Sensor *or* Command Lock	Logic: High=In Sensor Low=Not in Sens. / Logic: High=Lock ON Low=Lock OFF	
Input B	Position	Pulse: Variable Frequency	
		Frequency of signal (as % of user-defined fregency range)	20% 80% 50%
Enable	Enable	Logic: High=Enable Low=Disable	

Notes: Home sensor not used in this example. See Homing section for details.

Motor position (as % of total span) vs. time

I/O FUNCTIONS

Enable Input - Asserting this input energizes the motor shaft.

Input A - Asserting this input will make ClearPath continue to servo to its current position regardless of any changes to the frequency on Input B. Alternatively, this signal can be used as a home sensor input.

Input B - This input is connected to a digital signal whose frequency represents the desired position.

Output (HLFB) - See HLFB section for available modes.

Notes:

- A signal frequency on Input B equal to the user-defined minimum will move the motor to position 0. A frequency equal to the user-defined maximum will move the motor to position 1.

- Input frequency range: 20 Hz to 700 kHz.

- Frequencies between the minimum and maximum will command positions (proportionally) between position 0 and 1.

- If there are no transitions on Input B for 50 ms or more, this will be considered an error condition, and the motor will hold its current position.

MODE CONTROLS

Set Position Range. Define the ends of travel in encoder counts.

Set Min/Max Frequency. During operation, motor position is controlled by Input B signal frequency. Example; based on setting sbelow, a 10 kHz signal will command the motor to one end of travel (+100,000) and a 5kHz signal will command the motor to the other end of travel (+10,000 counts).

Click to open Torque Limit Setup dialog.

Click to open Homing Setup dialog.

Position Range Setup (cnts)

Posn at Min Freq	Posn at Max Freq
+10,000	+100,000

Min Frequency (kHz): 5.0

Max Frequency (kHz): 10.0

Torque Limit — OVR — Setup...

Homing — Setup...

Torque Override Indicator When lit, the main torque limit is being overridden by a secondary, user-set torque limit (e.g., when an axis is homing, the main torque limit may be overridden by the separate homing torque limit setting).

Speed Limit (RPM): 1,500.

Profile Conversion: RAS™ 44 ms — Setup...

Deadband (cnts): 1,600

Input A Mode: Command Lock ▼

Enter max. desired motor speed.

Adjust settings for **RAS™** (or optional **g-Stop™**) to convert standard trapezoidal move profiles into profiles that reduce noise, resonance, and vibration.

Commanded changes in position will be ignored until this minimum distance is exceeded. (Prevents motor hunting due to command signal dither.)

Command Lock
Home Sensor

or
Select **Home Sensor** to use Input A as a home sensor input.

With **Command Lock** selected (and the input asserted) ClearPath will servo to its current position regardless of changes made to the command frequency.

Hardware Input Status LEDs
Light = Input asserted (on)
Dark = Input de-asserted (off)

Displays HLFB output status.

Inputs and Commands	Enable On/Off	Input A Cmd Lock	Input B (kHz)	Commanded Position (cnts)	ServoOn Output
			7.483 kHz	+54,604	Servo On
☐ Override Inputs	☐ ⊙	☐ ⊙		+10,000	Set Home Posn

Check to turn on Soft Controls. Override cannot be activated when ClearPath is hardware enabled.

Soft Inputs and LEDs emulate hardware inputs. For use only when Soft Controls are active. **Caution: motor may spin when enabled.**

Click during homing operation to manually set home position.