

MULTI-SENSOR POSITIONING: BI-DIRECTIONAL (HOME TO HARD STOP)

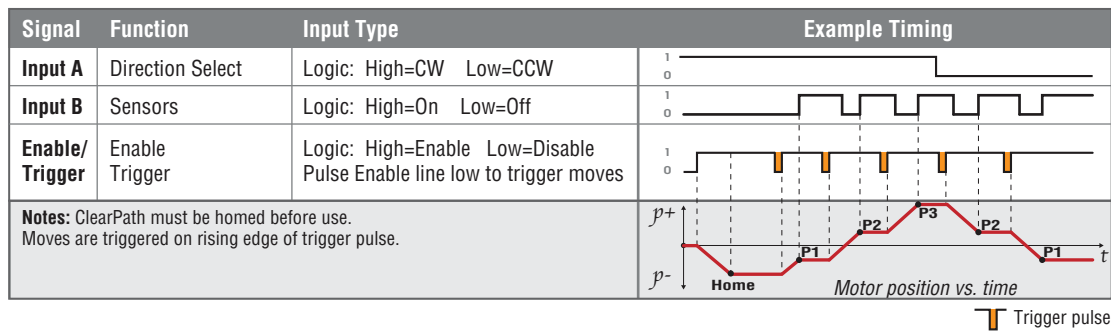
Available on
MCPV

MODE DESCRIPTION

Move to a maximum of 16 different positions using simple I/O from your PLC, microcontroller or similar to control ClearPath's direction and position.

Wire up to 16 switches or sensors in series with Input B. Assert the Enable Input to energize the motor windings. Once homing is complete, a trigger pulse starts ClearPath moving in the direction indicated by Input A. When Input B sees a count of transitions equal to the count of trigger pulses, ClearPath will ramp to a stop at the user-defined rate. (These transitions are typically switch closures or sensor interruptions.)

Position Control Multi-Sensor Position: Bi-directional (Home to Hard Stop)



I/O FUNCTIONS

Enable Input - Asserting this input energizes the motor shaft. A short pulse (user-definable) on this input is the trigger that starts a move. (A "pulse" is a momentary interruption of current into the Enable input.)

Input A - This input selects the direction of rotation.

Input B - Transitions on this input count up until they equal the count of transitions seen on Input A, at which time ClearPath will ramp to a stop.

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

Notes:

- Up to 16 sensors/switches can be placed along an axis and their outputs wired-ORed for multiple stops.
- Multiple trigger pulses issued in the same direction before a sensor is detected will cause the motor to continue through the number of sensors matching the number of pulses seen.
Example: If you send 3 trigger pulses, ClearPath moves to the third sensor position.
- ClearPath will always finish moves in one direction before executing moves commanded in the other direction.

- Homing is required in this mode; it can be performed upon first enable after power up, or upon every enable.
- Time to disable depends on trigger pulse setting. i.e. a longer trigger pulse setting will result in a longer time to disable.
- Once all sensors are mapped, the motor will stop at the same position each time, regardless of the direction of approach.

MODE CONTROLS

Select which state of Input A results in clockwise rotation at the motor shaft.

Select whether a sensor actuation turns Input B on or off.

Select sensor discovery method.

Click to open Torque Limit Setup dialog.

Click to open Homing Setup dialog.

Enter total number of sensors installed.

Direction Polarity: CW = Input A On

Arrival at Sensor...: Turns Off Input B

Sensor Total: 4

Map Sensors: As Detected

Torque Limit: OVR Setup...

Homing: Setup...

Speed Limit (RPM): 1,500

Accel (RPM/s): 50,000

Profile Conversion: RAS™ 21 ms

Sensor Latch (cnts): 50

Trigger Pulse: Setup...

Stops 5,813 cnts Beyond Sensor

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

Once a sensor is entered, ClearPath ignores sensors until it has moved at least this (user defined) distance.

Click to adjust trigger pulse timing.

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).

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

Displays current commanded sensor position.

Inputs and Commands: Enable On/Off Trigger, Input A Dir (CW/CCW), Input B Sensor(s)

Sensor Index: 4

ServoOn Output: Servo On

Override Inputs

Trg CCW

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.

Displays HILFB output status.

MULTI-SENSOR POSITIONING: UNIDIRECTIONAL (SENSORLESS HOMING)

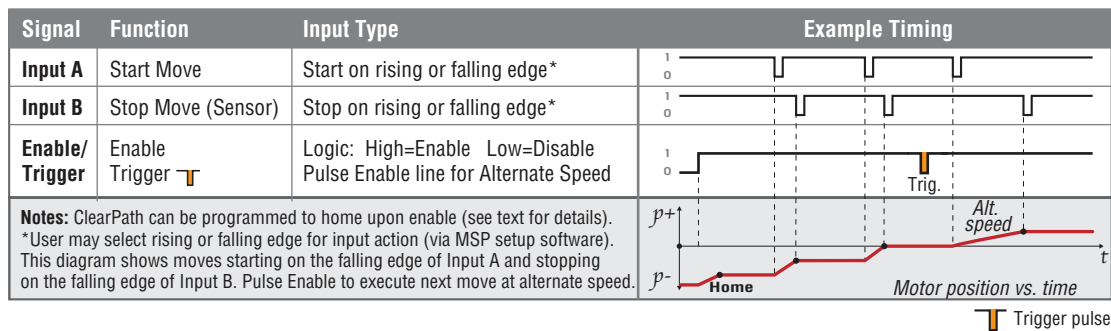
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MODE DESCRIPTION

Use simple I/O from your PLC, microcontroller etc. to command ClearPath to move to the sensor or switch of your choosing. Direction, speed, and acceleration are all user-defined in MSP.

This mode starts by finding a user-defined, shaft angle home position. Then, upon seeing a transition on Input A, ClearPath will start to move in one, fixed, user-defined direction, at one of two velocities. ClearPath will ramp to a stop at the user-defined rate when Input B has seen a count of transitions equal to the count of transitions on Input A. (These transitions are typically switch closures or sensor interruptions.)

Position Control Multi-Sensor Position: Unidirectional (Sensorless Homing)



I/O FUNCTIONS

Enable Input - Asserting this input energizes the motor shaft. A short pulse (user-definable) on this input tells ClearPath to use the alternate speed limit setting for the next move. (A "pulse" is a momentary interruption of current into the Enable input.)

Input A - A transition on this input starts a move. You can define whether the move starts on a rising or falling transition.

Input B - Transitions on this input count up until they equal the count of transitions seen on Input A, at which time ClearPath will ramp to a stop.

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

Notes:

- This mode can also be used without homing if all the desired stopping locations are equivalent (e.g., an indexing table with four positions spaced an even 90 degrees apart).

MODE CONTROLS

Select which edge transition at Input A will start a move.

Select whether a sensor actuation turns Input B on or off.

Once a sensor is entered, ClearPath ignores sensors until it has moved at least this (user-defined) distance.

Select direction of rotation.

Click to open Torque Limit Setup dialog.

Click to open Homing Setup dialog.

Start Move When...
Input A Turns On

Arrival at Sensor...
Turns Off Input B

Direction
CW

Sensor Latch (cnts)
50

Torque Limit
OVR Setup...

Homing
Disabled
Enabled
Setup...

Speed Limit (RPM)
60
Stops 122 cnts Beyond Sensor

Accel (RPM/s)
12,500

Profile Conversion
RAS™ 16 ms
Setup...

Alt Speed Limit (RPM)
5

Trigger Pulse
Setup...

Enter max. desired motor speed.

Automatically displays the distance, past a sensor that a motor will stop given the current settings for speed, accel, and RAS/gStop.

Enter max. desired acceleration rate.

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

Enter alternate motor speed limit (optional).

Click to adjust trigger pulse timing.

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).

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

Inputs and Commands

| Enable On/Off | Alt Speed | Input A Start Move | Input B Stop Move | ASG-Position |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | At Position |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

Override Inputs

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

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

Displays HLFB output status.

MULTI-SENSOR POSITIONING: UNIDIRECTIONAL (HOME TO SENSOR)

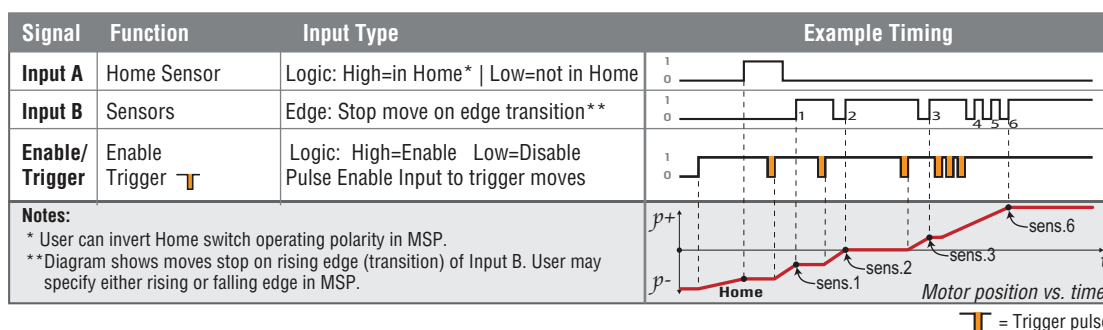
Available on
MCPV

MODE DESCRIPTION

Use simple I/O from your PLC, microcontroller etc. to command ClearPath to move to the sensor or switch of your choosing. Direction, speed, and acceleration are all user-defined in MSP. Optional homing (home-to-sensor) is available.

This mode starts by finding a home sensor wired to Input A. Then, a “trigger” pulse on the Enable input starts ClearPath moving in one, fixed, user-specified direction. When Input B sees a count of transitions equal to the count of trigger pulses, ClearPath will ramp to a stop at the user-defined rate. (These transitions are typically switch closures or sensor interruptions.)

Position Control Multi-Sensor Position: Unidirectional (Home to Sensor)



I/O FUNCTIONS

Enable Input - Asserting this input energizes the motor shaft. A short pulse (user-definable) on this input is the trigger that starts a move. (A "pulse" is a momentary interruption of current into the Enable input.)

Input A - This input is connected to the home switch. Homing options are set in the Homing Setup dialog.

Input B - Transitions on this input count up until they equal the count of trigger pulses seen on the Enable input, at which time ClearPath will ramp to a stop.

Notes:

- ClearPath can be programmed to home upon enable. If homing is not needed because all the desired stopping locations are equivalent (e.g., an indexing table with four positions spaced an even 90 degrees apart), consider using the Rotary with Sensorless Homing mode. This will allow the use of a second, alternate move velocity if desired.
- Moves are triggered by quickly pulsing the Enable input. Moves stop when sensor count at Input B matches trigger pulse count.
- Trigger pulses made in rapid succession result in longer, continuous moves.

MODE CONTROLS

Select whether a sensor actuation turns Input B on or off.

Turns On Input B
Turns Off Input B

Select direction of rotation.

Direction: CW

Once a sensor is entered, ClearPath ignores sensors until it has moved at least this (user-defined) distance.

Sensor Latch (cnts): 50

Click to open Torque Limit Setup dialog.

Torque Limit: Setup...

Click to open Homing Setup dialog.

Homing: Disabled, Enabled, Setup...

Speed Limit (RPM): 60.0

Accel (RPM/s): 8,000

Profile Conversion: RAS™ 40 ms, Setup...

Trigger Pulse: Setup...

Stops 284 cnts Beyond Sensor

Enter max. desired motor speed.

Enter max. desired acceleration rate.

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

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).

Click to adjust trigger pulse timing.

Automatically displays the distance, past a sensor that a motor will stop given the current settings for speed, accel, and RAS/gStop.

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

Inputs and Commands

Enable On/Off Trigger

Input A Home Switch

Input B Sensor(s)

ASG-Position: At Position

Override Inputs: Trg

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.**

Displays HLFB output status.