

# Path Following Datasheet

## Contents

[General Description](#)

[Common applications using Vention Path Following software and hardware](#)

[Path following specifications](#)

[Linear actuators specifications](#)

[G-code interface](#)

[Path following MachineApp : Operate your machine through a GUI](#)

## General Description

The Path following solution adds to Vention's manufacturing application portfolio by unlocking automatic path execution. The machine system comes as a comprehensive application kit, including MachineApp software for controls, 3-axis gantry robot, and optional gripper suggestions.

We offer both turn-key solutions and self-deployed solution for our path following applications. If you choose our turn-key solutions our team will provide end-to-end deployment support including: design validation, customization, pre-assembly, Factory Acceptance Test, commissioning, training & Site Acceptance Test. This ensures the delivery of a functional path following machine that performs according to the requirements defined in a project scope, from gripper validation to operator functionality.

**Below are the supported shapes by the software infrastructure built to interpret paths, convert to 3D setpoints and stream to MachineMotion's CAN drives**

- 3D linear segments
- 2D circular arcs

**Controlling your path following machine is possible in one of two ways:**

- Capabilities through G-codes commands by Python API
- Path following Machine App

**Vention's path following Machine App offers unique features that fit any custom solution such as**

Configuration & calibration of the workspace : mapping axes to drives, mapping digital output tools, configuring workspace dimensions

Configuration of the path: uploading G-code files, adding multiple paths to a workspace & visualization of the path

Execution of the path: dry run the job at a z-offset and slow speed, status of machine, ability to play/stop

---

## Common applications using Vention Path Following software and hardware

Vention Path Following software and hardware can be used for several applications such as:

- Laser engraving
- Dispensing (glue, painting ...)
- CNC
- Milling
- Routing
- Sanding
- Drilling

Use your desired end of arm tool and mount it directly on your Machine.

---

## Path following specifications

Specifications	Value	Notes
Linear Segments	3D	Linear Moves (G0 and G1) are supported for X, Y and Z axes Small segments can be blended to create curved 3d paths
Circular Arcs	2D	Arc Moves (G2 and G3): Support XY, YZ and ZX planar curves
Accuracy	+/- 0.1 mm	Tested on enclosed ball screw actuators Tolerance on blending between linear moves can be adjusted to prioritize TCP speed variability or accuracy Only characterized within 1000-3500 mm/min range
Min Arc Radius for constant speed	5 mm	Tested on enclosed ball screw actuators Tolerance on blending between linear moves can be adjusted to prioritize TCP speed variability or accuracy Only characterized within 1000-3500 mm/min range
TCP Speed Variability from Setpoint	+/- 10%	Tested on enclosed ball screw actuators Tolerance on blending between linear moves can be adjusted to prioritize TCP speed variability or accuracy Only characterized within 1000-3500 mm/min range

## Linear actuators specifications

	Enclosed timing belt	Enclosed ball screw
Linear Actuator Type	12.5 kg	10 kg
Repeatability (mm)	Up to +/-0.025 mm	Up to +/-0.025 mm
Travel (mm);	585, 855, 1530, 2295	145, 370, 640, 1315, 2080
Speed (mm)	2000	Up to 750
Acceleration (mm/s <sup>2</sup> )	2000	500
Linear capacity (N)	1100	3250
	<a href="#">Learn more</a>	<a href="#">Learn more</a>

## G-code interface

Vention's g-code interface provides a set of machine instructions that allow a user to smoothly move multiple axes at once. There exist various different versions of g-code that are offered by industrial manufacturers. Vention's is based off [RS-274-NGC](#) g-code language and [LinuxCNC](#). If using a CAM software to generate g-code, choosing either as a post-processor will ensure that it is compatible with MachineMotion. Vention does not support the entire list of g-code commands provided by RS-274-NGC or LinuxCnc, so some advanced codes (such as custom drilling routines or patterns) may not be recognized. The link below describes the two types of available g-code commands: operational mode commands and movement and tool commands.

### Link

# Path following MachineApp : Operate your machine through a GUI

Vention's Path following MachineApp is an easy-to-use and intuitive application to configure, program and operate your milling & drilling, dispensing, laser engraving machines. The app comes pre-loaded on the Vention pendant and can be accessed from the pendant or through a computer located on the same network. The Path following MachineApp includes features such as workspace and path configuration, path sequences setup, error and notification management, real-time process status and performance, simulation of your path and a visual display of the path following operations.

## **Path Following User Guide**