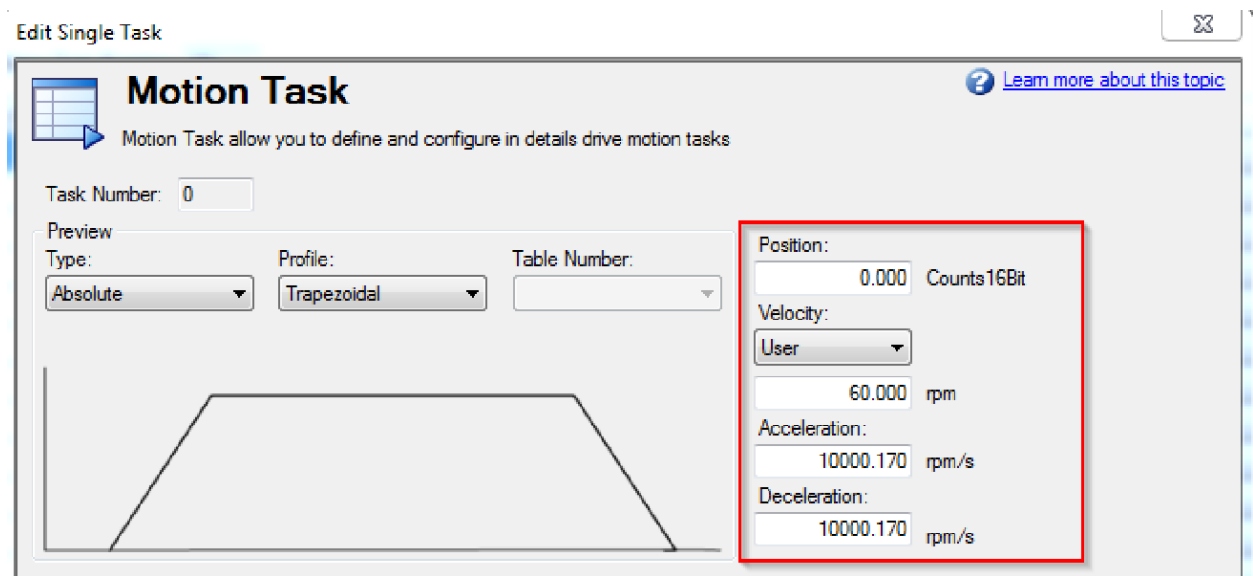
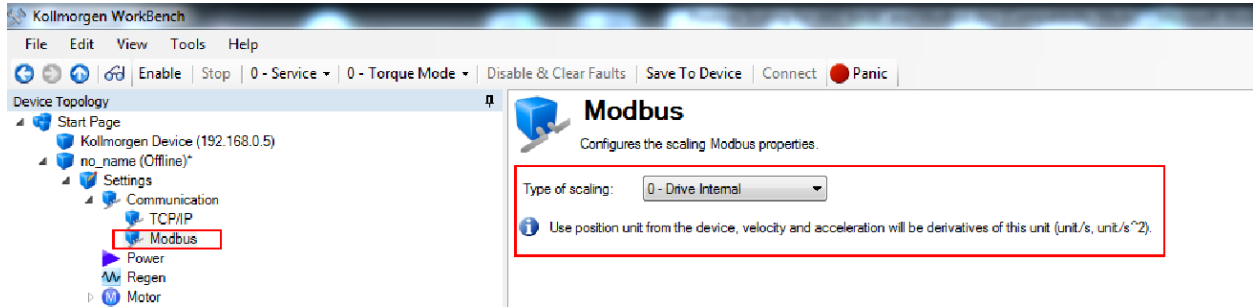


Position Scaling for AKD BASIC

For those already familiar with the AKD Motion Tasking drive, when a Task is created, the values have a resolution of X.XXX. If you are writing the value over Modbus then a value of 5000 yields 5.000 in the motion task assuming the Modbus Scaling in the AKD is set for Drive Internal which is the convention used in this document.



In the AKD BASIC, the Motion Tasks have been replaced with Program.

An important note is the MOVE.TARGETPOS (absolute move) or the MOVE.RELATIVEDIST (relative move) data type is integer. The value set by the program (and potentially by Modbus variables in the program) must be an integer value which means decimal points are not supported.

MOVE.TARGETPOS

General Information	
Type	R/W
Description	MOVE.TARGETPOS specifies the target position for an absolute (MOVE.GOABS) move.
Units	Depends on UNIT.PROTARY or UNIT.PLINEAR UNIT.ACCLINEAR Rotary: counts, rad, deg, (Custom Units), 16-bit counts Linear: counts, mm, μ m, (Custom Units), 16-bit counts
Range	N/A
Default Value	N/A
Data Type	Integer

MOVE.RELATIVEDIST

General Information	
Type	R/W
Description	Specifies the distance the motor turns during a relative move (MOVE.GOREL).
Units	Depends on UNIT.PROTARY or UNIT.PLINEAR UNIT.ACCLINEAR Rotary: counts, rad, deg, (Custom Units), 16-bit counts Linear: counts, mm, μ m, (Custom Units), 16-bit counts
Range	N/A
Default Value	N/A
Data Type	Integer

In setting up the units scaling in Workbench, go to the Units screen.

This will demonstrate an issue you may run into if this is not setup correctly (again the AKD BASIC is different than the AKD Motion Tasking drive).

For example suppose you attempt to use the mechanical model in Workbench.

In this case a lead screw is modeled. However, per the scaling and monitoring the position feedback the resolution is 1 inches so the displayed value of the position feedback is 0 until the motor has turned 5 revolutions with no displayed value from 0 to less than 5 revolutions.

The screenshot shows the 'Units' configuration window in Kollmorgen Workbench. The 'Device Topology' on the left lists various drive settings. The 'Units' dialog is open, showing the following configuration:

- Select Type of Mechanics: **Lead Screw**
- None (radio button), **Turns** (radio button), Teeth (radio button)
- Motor: 5, Load: 1
- Position Unit: 3 - Custom (mechanics dependent)
- Velocity Unit: 3 - Custom/s (mechanics dependent)
- Acceleration Unit: 3 - Custom/s² (mechanics dependent)
- Custom Position Unit: Inches
- Modbus Unit: [Goto Modbus](#)
- Less << button
- Position: 0 inches
- PIN: 1
- POUT: 5

The watch window at the bottom shows the following data:

Enab...	Device	Parameter	Value	Units
<input checked="" type="checkbox"/>	BASIC_Drv (Onl...	PLFB - Position feedback		0 inches

To correct for this the resolution desired needs to be determined.

In this next example suppose the following actuator is used:

Feedback:
 R - Resolver
 2 - 2048 Line Encoder
 C - Smart Feedback Device (SFD)
 DA - Single-Turn Absolute Sine Encoder

Motor Brake:
 N - No Brake
 2 - 24 VDC Brake

Connector:
 B - IP65 motor mount
 C - IP65, on .5 m cable

AKM Brushless Servomotor

Drive Ratio
 10 = 1:1 timing belt
 10L = 1:1 inline coupling
 15 = 1.5:1 timing belt
 20 = 2:1 timing belt
 50 = 5:1 helical gear
 100 = 10:1 helical gear

Screw Lead Type
 04A = 4 mm lead (acme screw)
 06B = 5 mm lead (ballscrew)
 16B = 16 mm lead (ballscrew)

Stroke Length
 150 150 mm stroke length
 200 200 mm stroke length
 250 250 mm stroke length
 300 300 mm stroke length
 Intermediate stroke length in increments of 1 mm may be typed directly in length field; note that a cut charge applies.

Cylinder Mounts
 MF1 rectangular front flange mounting
 MF2 rectangular rear flange mounting
 MF3 rectangular front and rear flange mounting
 Multiple mounts available. Contact Customer Support.

Rod End
 -FT1M female threaded rod end (metric)
 -MT1E male threaded rod end (English)
 -MT1M male threaded rod end (metric)

Options
 w/o brake on screw

Cabling
 -C0 w/o motor cable

EC2-AKM23D-B2C-50-16B-150-MF1-MT1M-C0

EC2 series electric cylinder, AKM servomotor with dual Intercontec connectors, 24 VDC motor-brake, smart feedback device, 5:1 helical gear, 16 mm lead (ballscrew), 150 mm stroke length, rectangular front flange mounting, male threaded rod end, w/o motor cable.

The desired resolution for the application is X.XXX inches.

There is a 5:1 gear reduction and a 16mm lead ballscrew.

$16\text{mm/rev} * 1\text{ inch}/25.4\text{ mm} * 1\text{ rev}/5\text{ motor rev} = 0.125984\text{ in/motor rev.}$

$1\text{ motor rev}/0.125984\text{ in} = 7.9375\text{ motor rev per inch}$

Since an integer value must be entered:

$1\text{ motor in} (* 10000) = 7.9375\text{ motor rev} * 10000$


$10000\text{ in} = 79375$

But a resolution of X.XXX is desired so

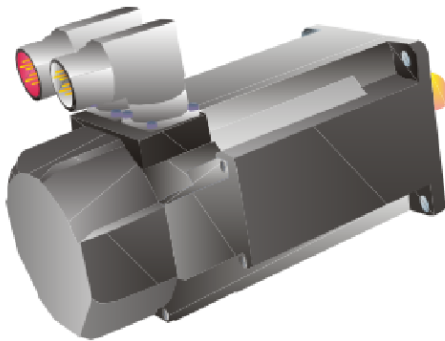
Add 3 zeroes to the inches

10,000,000 inches = 79374 rev

Set the units for Motor Only and use custom scaling and use the scaling calculated.

 **Units**
You can select the units used for positions, velocities and accelerations.

Select Type of Mechanics:



Position Unit:

Velocity Unit:

Acceleration Unit:

Modbus Unit: [Goto Modbus](#)

Custom Label:
 inches = rev.

Now when 1 inch is the desired target position, the AKD BASIC syntax will be

Move.Targetpos=1000 (implies 1.000 inches).