StepServo Linear Integrated Drive with Absolute Encoder

The compact integrated SLIM Drive package provides the following performance enhancements:

- **Closed-Loop Control:** Step-servo motors use built-in high-resolution encoders to enable closed-loop position control. This eliminates the issue of lost steps that can occur with open-loop stepper systems.
- **Higher Torque Output:** Step-servo motors allow for high acceleration and deceleration applications better than standard steppers.
- **Wider Speed Range:** Unlike traditional steppers that lose torque at high speeds, step-servo motors maintain high torque across a broader speed range.
- **Reduced Heat Generation:** Closed-loop control allows the motor to draw only the current needed, reducing heat generation compared to traditional steppers that use constant high current.
- **Improved Accuracy:** The absolute encoder feedback provides precise position measurement, eliminating uncertainties in rotor settling position that can occur with open-loop steppers.
- **Smoother Motion:** Closed-loop control results in smoother velocity tracking and reduced vibration compared to traditional stepper operation.
- **Compact Package / Reduced Connection Points**
- **Simple Pulse/Direction/Enable Interface**
- **Autonomous Programmable Motion Sequences**

Available on External Linear design hybrid actuators
USB, RS-485 Communication or CANopen Fieldbus with Interface Module Available
Wide variety of resolutions: from 0.00006-in (.001524 mm) per step to 0.00192-in (.048768mm) per step.
RoHS Compliant

Size 17 External Linear
with Programmable SLIM Drive

Size 17 External Linear: 43 mm (1.7-in) Hybrid Linear Actuator (1.8° Step Angle)		
Part Number	Single Stack	EM43H □□ – □□ – □□□ [1]
	Double Stack	EM43M □□ – □□ – □□□ [1]
Wiring		Bipolar
Winding Voltage		2.8 VDC [2]

[1] Part numbering information on page 5.
[2] Contact Haydon Kerk if higher voltage motor is desired.

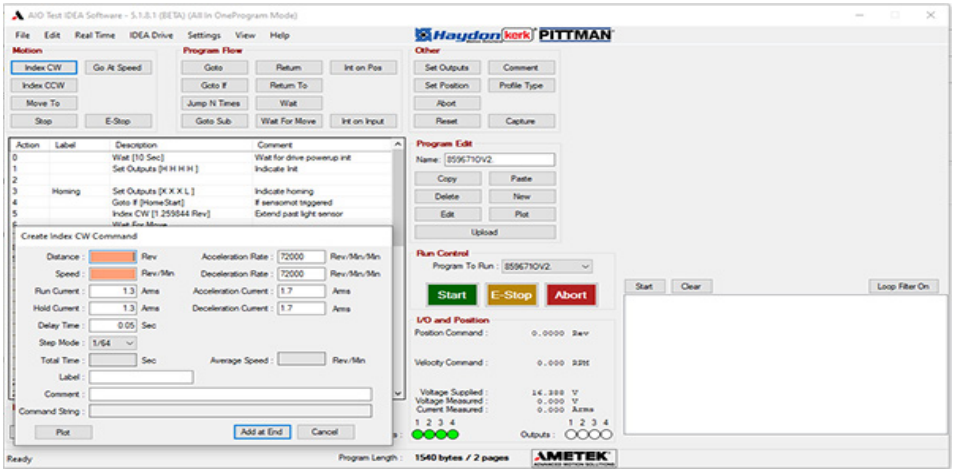
Linear Travel / Step Screw Ø .218" (5.54 mm)		Order Code I.D.
inches	mm	
.00012	.0030*	N
.00024	.0060*	K
.00048	.0121*	J
.00096	.0243*	Q
.00192	.0487*	R

Linear Travel / Step Screw Ø .250" (6.35 mm)		Order Code I.D.
inches	mm	
.00015625	.0039*	P
.0003125	.0079*	A
.000625	.0158*	B
.00125	.0317*	C

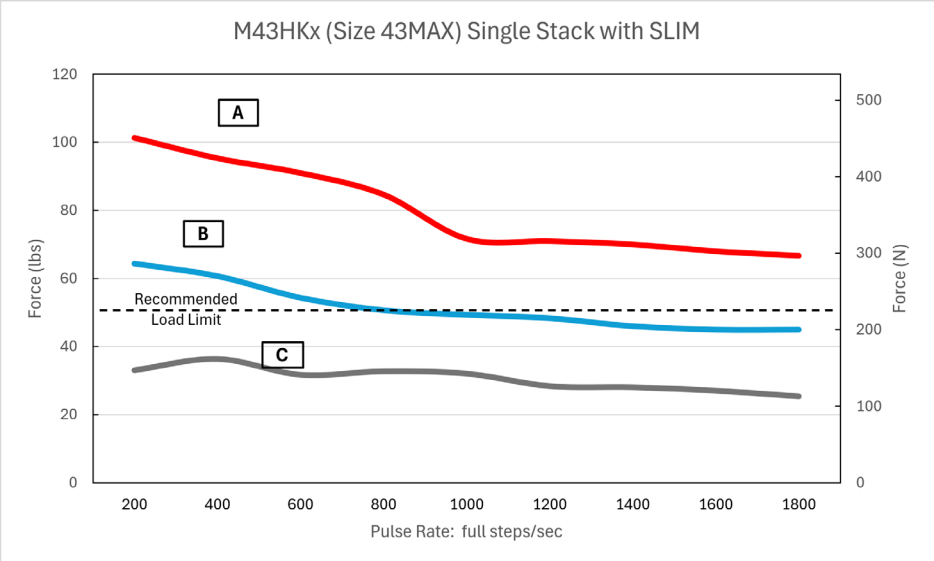
*Values truncated.

Simple to use SLIM™ / IDEA™ Drive software with on-screen buttons and easy-to-understand programming guides

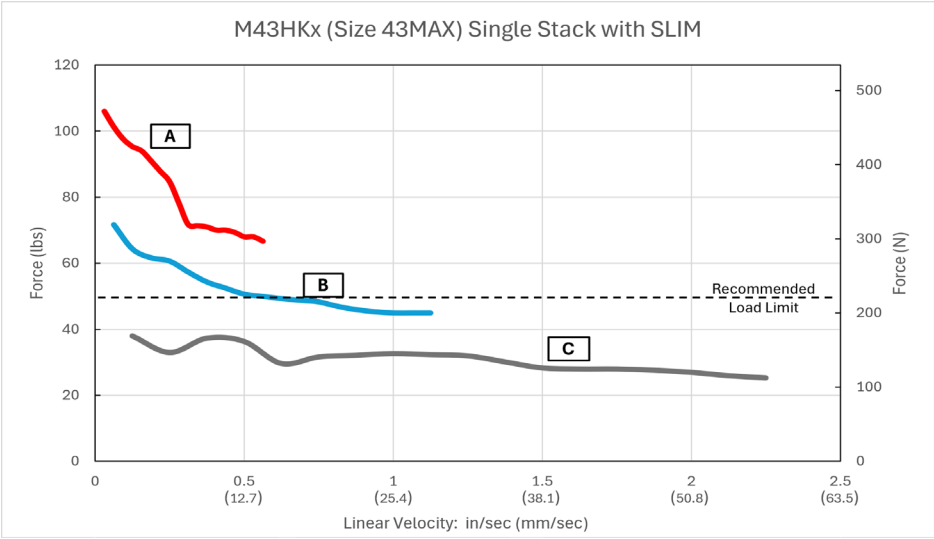
Software program generates motion profiles directly into the system and also contains a "debug" utility allowing line-by-line execution of a motion program for easy troubleshooting.



FORCE vs. PULSE RATE – Chopper – Bipolar – 100% Duty Cycle – 8:1 Motor Coil to Drive Supply Voltage – Ø .250 (6.35) Lead Screw



FORCE vs. LINEAR VELOCITY – Chopper – Bipolar – 100% Duty Cycle – 8:1 Motor Coil to Drive Supply Voltage – Ø .250 (6.35) Lead Screw



NOTE: All chopper drive curves were created with a 5 volt motor and a 40 volt power supply.

Ramping can increase the performance of a motor either by increasing the top speed or getting a heavier load acceleated up to speed faster. Also, deceleration can be used to stop the motor without overshoot.

With L/R drives peak force and speeds are reduced, using a unipolar drive will yield a further 30% force reduction.

Size17 Double Stack

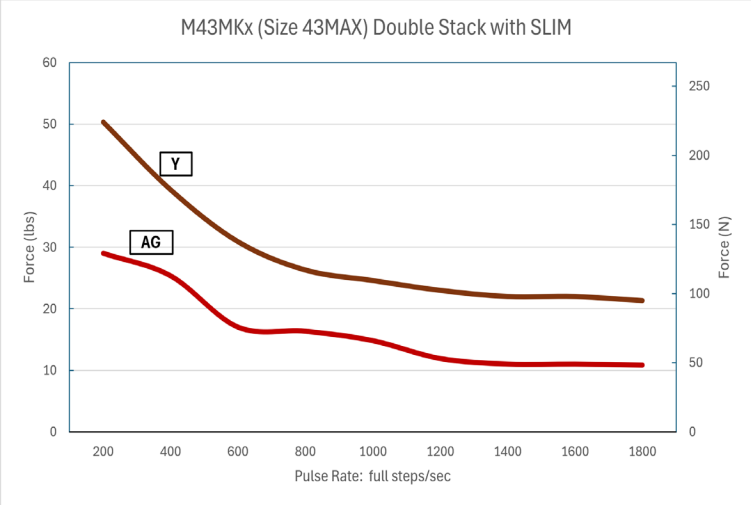
FORCE vs. PULSE RATE

– Chopper – Bipolar –

100% Duty Cycle –

8:1 Motor Coil to Drive Supply Voltage

– Ø .250 (6.35) Lead Screw



Size17 Double Stack

FORCE vs. LINEAR VELOCITY

– Chopper – Bipolar –

100% Duty Cycle –

8:1 Motor Coil to Drive Supply Voltage

– Ø .250 (6.35) Lead Screw

NOTE: All chopper drive curves were created with a 5 volt motor and a 40 volt power supply.

Ramping can increase the performance of a motor either by increasing the top speed or getting a heavier load accelerated up to speed faster. Also, deceleration can be used to stop the motor without overshoot.

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Drive Specifications

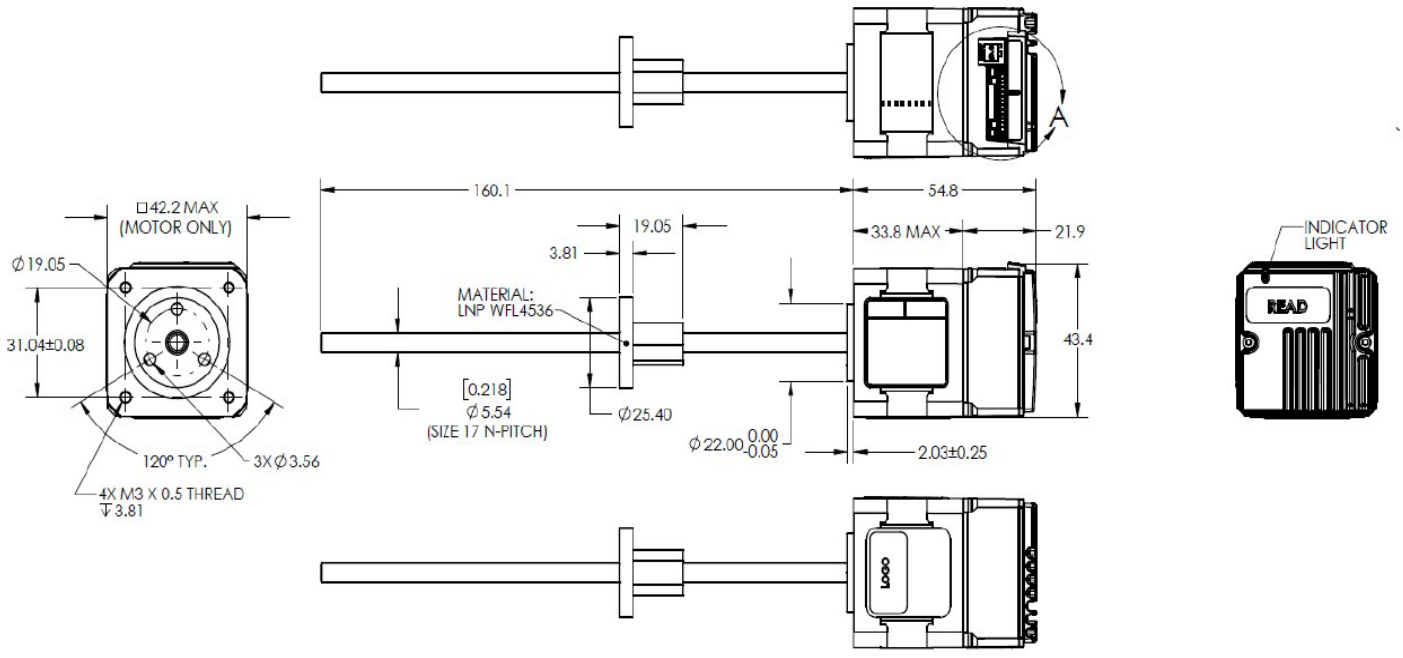
Drive Specifications	
Digital I/O Voltage Range	5-24 VDC
Digital Inputs	3
Digital Outputs	1
Digital Sinking Outputs	200mA (each)
Digital Input Maximum Current	8mA (each)
Maximum Temperature	70°C (at heat sink)
Position Counter Range	64 bit
Input Voltage	12 VDC to 42 VDC

Accessories

Accessories		
Part Number	**Description**	**Models**
56-2623	SLIM Drive Power Harness, Long	All
56-1346	USB Cable (A to mini B), 2 meters (78.74)	USB, CAN, RS485
KTUSB	SLIM USB Communications Interface	USB, PDE
56-2597-01	PDE Logic I/O Signal harness	PDE
KTRS485	SLIM RS485 Communications Interface	RS485
KTCAN	SLIM Can Communications Interface	CAN
84-152	Cable Assembly, CAN Convertor to KTCAN Interface	CAN
52-870	USB to CANopen Converter	CAN
UTR4852	USB to RS485 Converter	RS485
56-1536-4	RS-485 cable, 1 meter (39.37)	RS485

Starter Kits		
Part Number	**Description**	**Models**
78-180	SLIM PDE Accessories Starter Kit Includes: 56-2623, 56-2597-01	PDE
78-181	SLIM USB Accessories Starter Kit Includes: 56-2623, 56-1346, KTUSB	USB
78-182	SLIM CAN Accessories Starter Kit Includes: 56-2623, 84-152, KTRS485, 52-870	CAN
78-183	SLIM RS485 Accessories Sarter Kit Includes 56-2623, 56-1536-4, KTRS485, 56-1346, UTR4852	RS485

External Linear



Identifying the Hybrid Part Number Codes when Ordering

EM	43	M	K	N	—	2.8	—	910
Prefix E = External K = External with 40° thread form	Series Number Designation 43 = 43000 (Series numbers represent approximate width of motor body)	Style H = 1.8° External, Single Stack M = 1.8° External, Double Stack	Coils K = SLIM Drive, USB or RS485 C = SLIM Drive, CANopen	Code ID Resolution Travel/Step N = .00012-in (.0030) K = .00024-in (.0060) J = .00048-in (.0121) Q = .00096-in (.0243) P = .00015625-in (.0039) A = .0003125-in (.0079) B = .000625-in (.0158) C = .00125-in (.0317) R = .00192-in (.0478)		Voltage 2.8 = 2.8 VDC Custom V available		Suffix Stroke Example: –910 = 1-in (Refer to Stroke chart on Captive motor series product page.) Suffix also represents: –800 = Metric –900 = External Linear with grease and flanged nut –XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

NOTE: Dashes must be included in Part Number (–) as shown above. For assistance call our Engineering Team at 203 756 7441.

PinOut/Wiring Connections

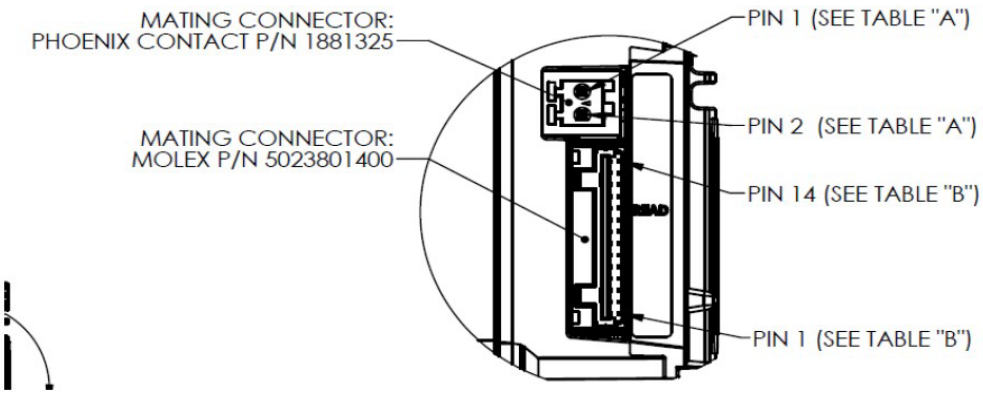


Table A Power Connector		
Pin	Signal	Marking
1	VDC_NEG	-
2	VDC_POS	+

Table B Signal I/O Connector		
Pin	Signal	Marking
1	STEP+	ST+
2	STEP-	ST-
3	DIR+	DR+
4	DIR-	DR-
5	EN+	EN+
6	EN-	EN-
7	ERROR+	ER+
8	ERROR-	ER-
9	TX	TX
10	RX	RX
11	CLK	CK
12	UC	V-
13	FS	FS
14	VAUX	V+