ElectroCraft®
powering innovation™

Integrated Motor Drive Controllers

PT, PR & PS-Series

Catalog
IMDC01EN

ELECTROCRAFT
PRO SERIES

www.electrocraft.com

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For over 60 years, ElectroCraft has been helping engineers translate innovative ideas into reality – one reliable solution at a time. As a global specialist in custom motor and motion technology, we provide the engineering capabilities and worldwide resources you need to succeed.

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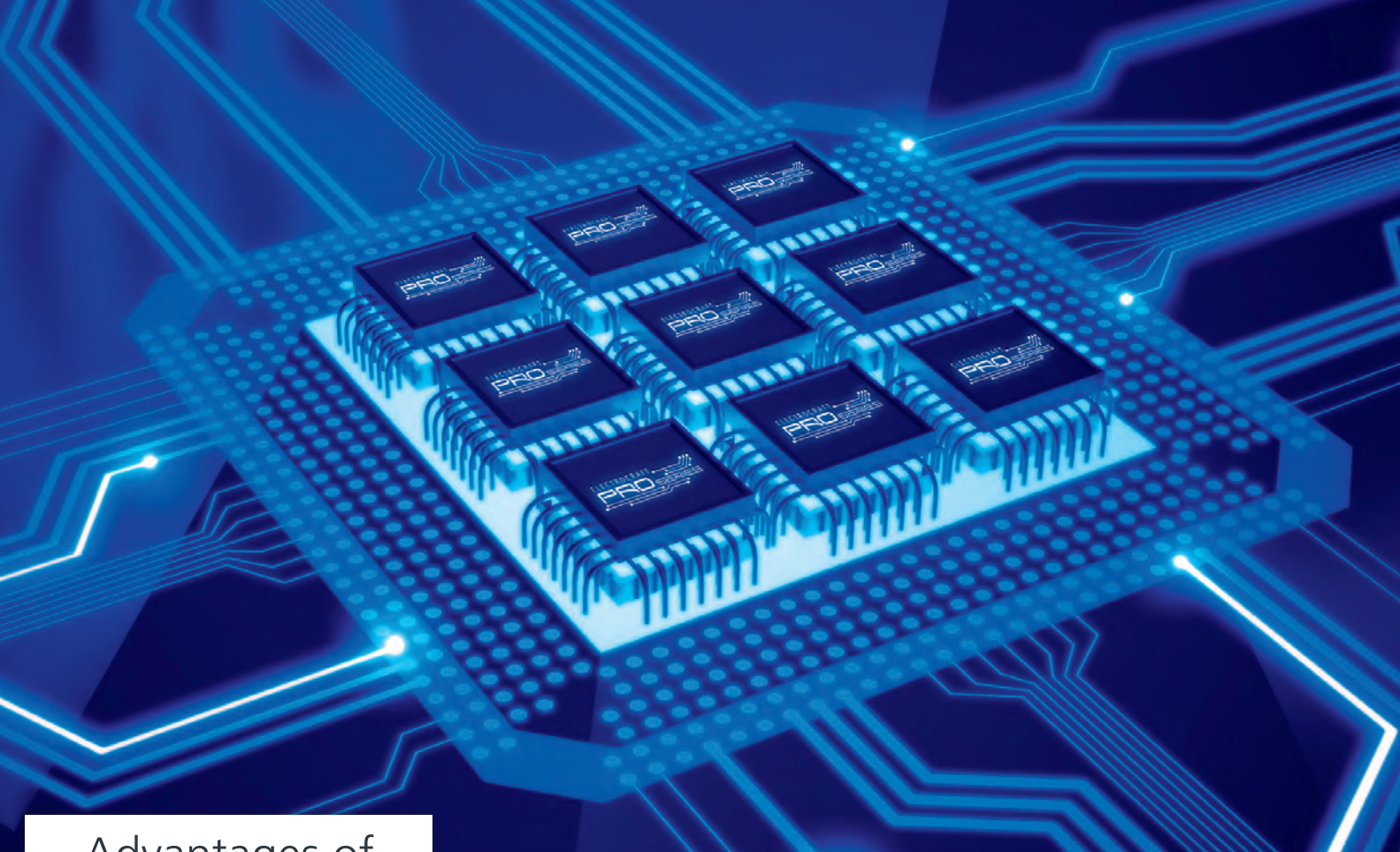sales@servo2go.com
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Advantages of
Integrated Motor Drive Controllers

ELECTROCRAFT PRO SERIES

ElectroCraft PRO Series Integrated Motor Drive Controllers (IMDC) combine our most advanced motor, drive and control technologies into a single package to provide a new level of motion control capability.

The motor types have been selected for their compact size, high performance characteristics and rugged, field-proven capabilities. The integrated drive is based on ElectroCraft's successful PRO Series programmable servo drive. Together, each combination offers a level of functional precision that has never previously been available in a single package.

The Range.

The PRO Series IMDC range includes brushless motor variants, stepper motor variants and linear actuators. Each is ruggedly designed to withstand industrial environments and incorporates a high performance servo drive incorporating our PRO Series advanced control and sequencing functionality. Each ultra-compact package includes high-performance closed-loop control, a fully-programmable digital sequence engine, fully-configurable analog and digital I/O and deterministic real-time communications. These enable each IMDC to serve as either a stand-alone control solution or as part of a fully-integrated multi-axis system.

The Advantages.

Combining motor, drive and controller in a single package offers the potential to revolutionize machinery design.

Use ElectroCraft's PRO Series IMDC range to

- reduce build time. Fewer components mean less man hours.
- reduce cabling complexity and cost.
- simplify build. Smaller inventory and fewer operations needed to install.
- reduce installation time.
- reduce machine footprint. No need for a centralized control cabinet.
- reduce total installation cost.

Using the PRO Series IMDC range will also

- improve product quality. Each drive is fully-optimized to suit each motor and the embedded tuning capability optimizes loop stability.
- optimize energy efficiency. Energy losses through cabling are reduced and each motor can be individually tuned to match the characteristics of its load.
- reduce EMC issues.
- reduce operation costs.

Highly advanced functions.

The PRO Series IMDC's advanced functionality means that you can address complex system control applications. The drive's open architecture means that all system variables are accessible to the designer, so data analysis and high-level diagnostics can be easily implemented.
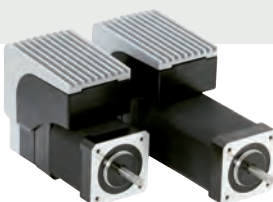
ElectroCraft PRO Series

Integrated Motor Drive Controllers

ELECTROCRAFT
PRO SERIES

High performance variable-speed motors with fully-integrated drives and motion controllers. Rated input voltage 12-48V. Available in three motor types:

ElectroCraft PT Stepper IMDC.

- Intelligent stepper motor with fully-integrated drive, motion controller and optional position feedback.
- Available in two sizes, 42 mm and 56 mm (comparable to NEMA17 and 23) and up to three motor lengths.
- From 0.44 Nm – 1.7 Nm (62 oz-in – 241 oz-in) of holding torque available.
- Separate power and logic supplies.
- Open-loop or closed-loop operation.
- 5 dedicated and programmable digital inputs, 1 analog input.
- 2 programmable outputs.
- Internal EEPROM for data and motion program storage.
- RS232 or CAN/CANopen communication bus.

ElectroCraft PR Brushless DC IMDC.

- Intelligent brushless servo motor drive with fully-integrated, motion controller and position feedback.
- Available in two sizes, 42 mm and 60 mm (comparable to NEMA17 and 23) and four motor lengths.
- 0.08 Nm – 0.52 Nm (12 oz-in – 73.6 oz-in) of continuous torque available, at speeds up to 10,000 rpm.
- Separate power and logic supplies.
- 5 dedicated and programmable digital inputs, 1 analog input
- 2 programmable outputs.
- Internal EEPROM for data and motion program storage.
- RS232 or CAN/CANopen communication bus.

ElectroCraft PS Stepper Actuator IMDC.

- Intelligent linear actuators with fully-integrated drive, motion controller and optional position feedback.
- Available in two sizes, 42 mm and 56 mm (comparable to NEMA17 and 23) and two motor lengths.
- Up to 800 N (180lb) of holding force.
- Speeds up to 174 mm/sec (6.8 in/sec).
- Separate power and logic supplies.
- Open-loop or closed-loop operation.
- 5 dedicated and programmable digital inputs, 1 analog input.
- 2 programmable outputs.
- Internal EEPROM for data and motion program storage.
- RS232 or CAN/CANopen communication bus.

Drive and Control Features

- Various modes of operation including torque, speed or position control, position or speed profiles, external analog reference or commands sent via communication bus.
- Comprehensive motion instruction set for the definition and execution of motion sequences.
- CAN 2.0B up to 1Mbits/s (CANopen (CiA 301v4.2 and 402v3.0) protocols).
- Single power supply 12 – 36V, dual supply 36 – 48V.

- Logic supply optional 9 – 36V.
- 7 digital I/O (5 inputs and 2 outputs) and 1 analog input.
- Standalone operation with stored motion sequences.
- RS-232 serial communication.
- Switching frequency up to 100kHz.
- Hardware protections; short-circuit, over-voltage, under-voltage and I^{2}T.

Integral connections between motor and drive. Drive is pre-configured to motor.

All connectors on backplate for ease of access.

Single power cable can be daisy-chained between multiple motor drives.

Independant connector board provides straight-forward customization for OEM interface.

Integral incremental encoder (optional on PT and PS variants) for high resolution closed-loop performance.

Elevated drive position relative to motor for more efficient cooling.

Integrated PRO Drive incorporates local machine I/O functions.

Compact structure reduces machine envelope.

Wide range of screw threads available for either high force or precision position control

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Integrated Motor Drive Controller

Electrical Specifications

Conditions

Operating		Min	Typ	Max	Units
Ambient Temperature		0		+40	°C
Ambient Humidity	Non-condensing	0		90	% Rh
Altitude/Pressure	Altitude (vs. sea level)	-0.1	0 – 2.5	*	km
	Ambient Pressure	0	0.75 – 1	10.0	atm
Storage		Min	Typ	Max	Units
Ambient Temperature		-40		+100	°C
Ambient Humidity	Non-condensing	0		100	% Rh
Ambient Pressure		0		10.0	atm

* IMDCs can be operated in vacuum (no altitude restriction), but at altitudes over 2,500 m, current and power rating are reduced due to thermal dissipation efficiency.

Electrical Specifications

Maximum DC supply voltage	Motor			48	Volt
	Logic			36	Volt
Nominal switching frequency				20 – 60	kHz

Input

Logic Supply input (+V_{LOG})		Min	Typ	Max	Units
Supply Voltage	Nominal values	9		36	V_{DC}
	Absolute maximum values, drive operating but outside guaranteed parameters	8		39	V_{DC}
	Absolute maximum values, continuous	-0.6		42	V_{DC}
	Absolute maximum values, surge (duration ≤10 ms)	-1		+45	V_{DC}
Supply Current – No Load on Digital Outputs	+V_{LOG} = 9 V		190	320	mA
	+V_{LOG} = 12 V		145	220	
	+V_{LOG} = 24 V		100	150	
	+V_{LOG} = 40 V		70	125	
Motor supply input (+V_{MOT})		Min	Typ	Max	Units
Supply Voltage	Nominal values	11		50	V_{DC}
	Absolute maximum values, drive operating but outside guaranteed parameters	9		52	V_{DC}
	Absolute maximum values, continuous	-0.6		54	V_{DC}
	Absolute maximum values, surge (duration ≤10 ms)	-1		+57	V_{DC}
Supply Current	Idle		1	5	mA
	Operating	-20	±8	+20	A
	Absolute maximum value, short-circuit condition (duration ≤10 ms)			26	A

Protection

| Motor Outputs (A/A+, B/A-, C/B+, BR/B-)		Min	Typ	Max	Units
Short-circuit protection threshold	Measurement range		±26	±30	A
Short-circuit protection delay		5	10		μsec

MotionPRO Software

ElectroCraft's PRO Series Integrated Motor Drive Controllers are supplied with MotionPRO drive configuration software. This is a menu-driven configuration tool that enables the user to set up all motor, drive, I/O, communication and sequencing functions from a single interface.
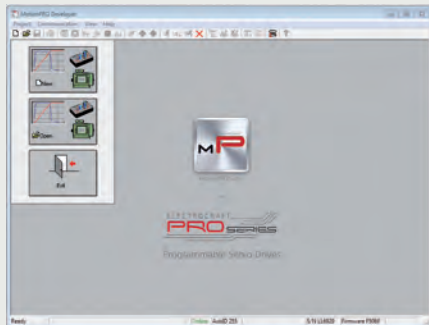
The software has been designed for ease of use. All parameters can be accessed via a series of menus from a single set-up screen. Simply click on the appropriate icon to open the menu for the function you want to configure.


Motion profiles can be programmed online or offline. Operators can create their own program or upload a program from a library or an existing installation which can then be modified if desired.

Once the system has been configured, the program can be stored for download into other products for quick and easy set-up of multiple installations.
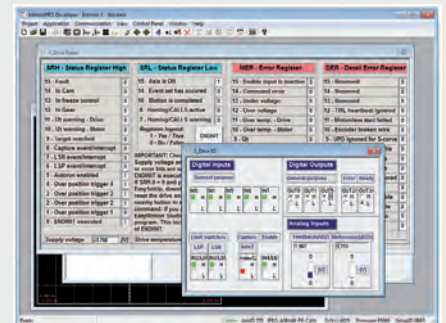
ElectroCraft's MotionPRO drive configuration software incorporates a number of diagnostic tools to enable the operator to quickly optimize the performance of the system. This includes real-time oscilloscope display, I/O status indicators and dynamic parameter monitors. The products' open-architecture structure enables any operating parameter to be monitored.
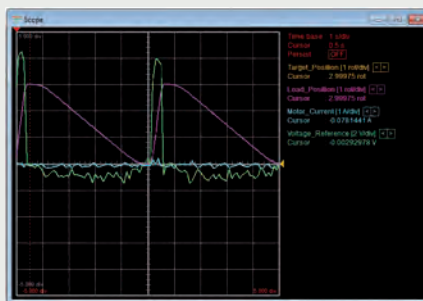
The motion-configuration tool incorporates standard motion functions, such as S-curves, as well as a fully-programmable sequence engine and a library of mathematical functions to allow the operator to calculate complex motion sequences.
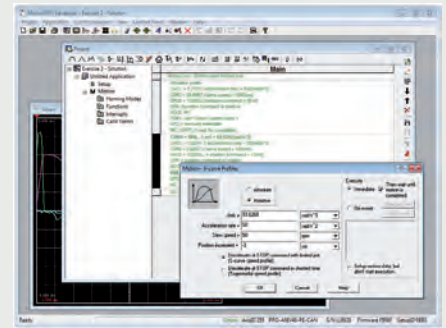
The Motion Sequencer is linked directly to the analog and digital I/O ports. I/O functionality is assigned by software and the MotionPRO conditional logic enables any I/O port to be assigned to any parameter, allowing the motor drive to operate as a self-contained system controller.

Whether you want your IMDC to serve as a stand-alone motion controller, or as part of a multiple axis distributed array, ElectroCraft's MotionPRO configuration software has the flexibility to enable you to set up your system quickly and easily.

PT42: Stepper IMDC

ELECTROCRAFT
PRO SERIES

The PT42 combines the ElectroCraft TorquePower™ Enhanced high-performance stepper motor with the advanced functionality of the Integrated PRO Series Drive. The motor can be driven in open-loop stepper mode or in closed-loop using the integrated encoder and offers high holding torque and high accuracy in a robust, compact package. Two frame lengths are available in this size, offering holding torque of up to 55 Ncm (78 oz.in).
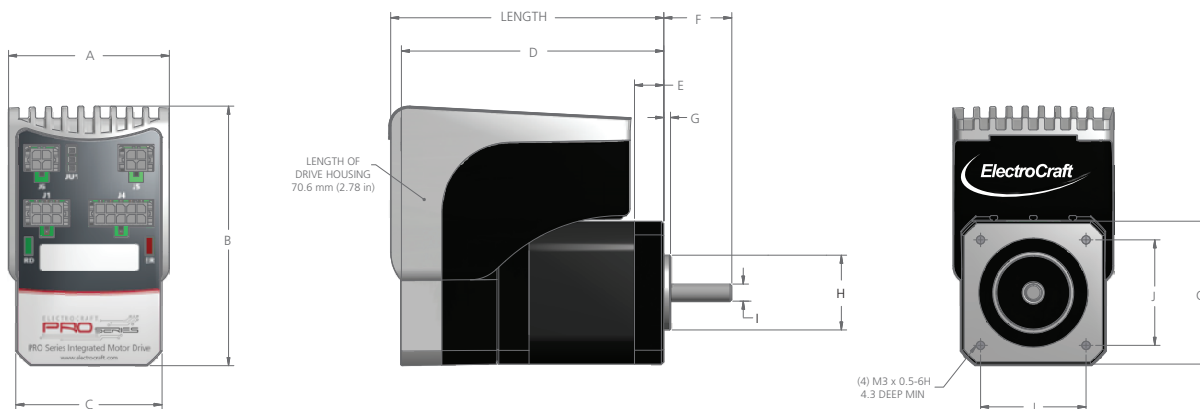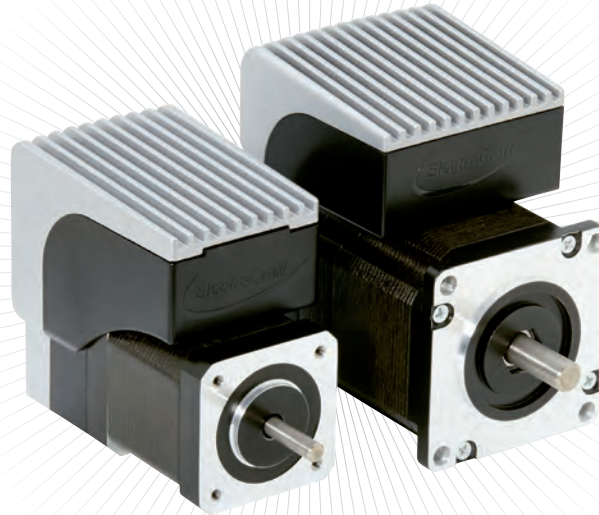
Model	Units	Length	A	B	C	D	E	F	G	H	I	J
PT42-A44	mm	72.27	47.24	76.3	42.96	69.32	8.6	20±0.76	2.0	21.97-22.0	4.99-5.0	31.0
	inch	2.85	1.86	3.0	1.69	2.73	0.34	0.79±0.03	0.08	0.8648-0.866	0.1963-0.1967	1.22
PT42-A55	mm	80.27	47.24	76.3	42.96	77.12	8.6	20±0.76	2.0	21.97-22.0	4.99-5.0	31.0
	inch	3.16	1.86	3.0	1.69	3.04	0.34	0.79±0.03	0.08	0.8648-0.866	0.1963-0.1967	1.22

Available with ¼ " shaft. See page 26 for NEMA sizes.

Parameter

Motor designation	PT42-A44	PT42-A55	Motor designation	PT42-A44	PT42-A55
Rated input voltage *VDC*	12 – 48		Step Angle *°/Step*	1.8	
Frame length *mm (in)*	72 (2.85)	80 (3.16)	Rotor Inertia Motor Rated Current, A 2.8 *Kg.cm² (oz-in sec²)*	0.062 (0.00086)	0.083 (0.0012)
Holding Torque *Ncm (oz-in)*	44 (62)	55 (78)	Phase Resistance *Ohm*	1.25	
Weight* *Kg (oz)*	0.47 (16.6)	0.54 (19)	Phase Inductance *mH*	2.32	

*Typical weight. May vary with options selected.   Rated operating temperature 40ºC

Torque/speed curves

PT42-A44

Speed (Rev/min)

Torque (Ncm) / Torque (oz.in)

- PT42-A44 24V
- PT42-A44 48V

Speed (Half steps/sec)

PT42-A55

Speed (Rev/min)

Torque (Ncm) / Torque (oz.in)

- PT42-A55 24V
- PT42-A55 48V

Speed (Half steps/sec)
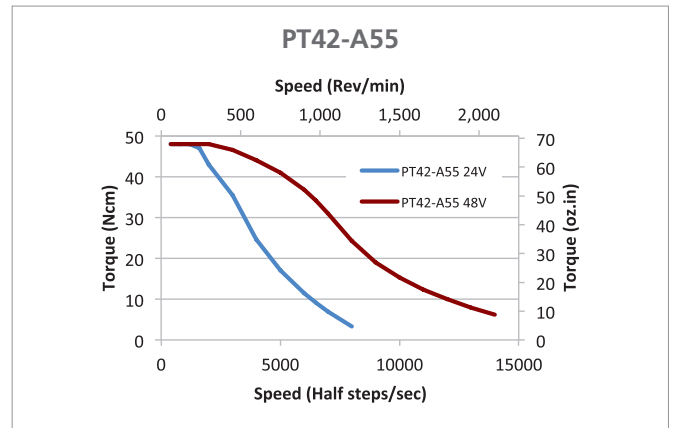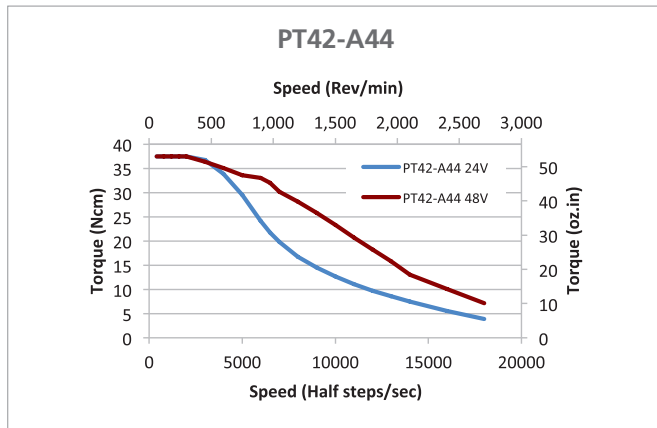
Order part code for the PT42-A44V48A-0-D-CAN

PT	42	-	A	44	V	48	-	0	D	CAN	See fold-out in back of brochure for more information.
Motor technology	Frame size		Drive type	Holding torque		Voltage		Front Shaft	Feedback	Network	

Customize your options ...

For the past 60 years, the global team at ElectroCraft has helped engineers like you translate innovative ideas into reality.

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PT56: Stepper IMDC

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The PT56 combines the ElectroCraft TorquePower™ Plus hybrid stepper motor with the advanced functionality of the Integrated PRO Series Drive. The motor can be driven in open-loop stepper mode or in closed-loop using the integrated encoder and offers high holding torq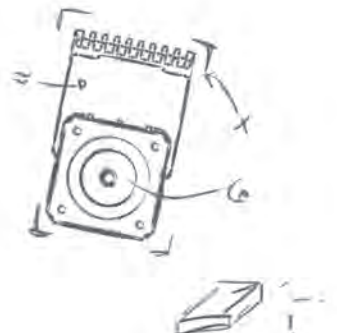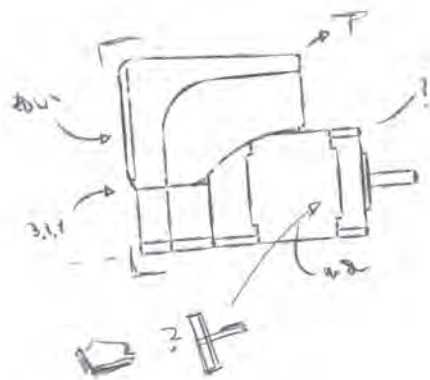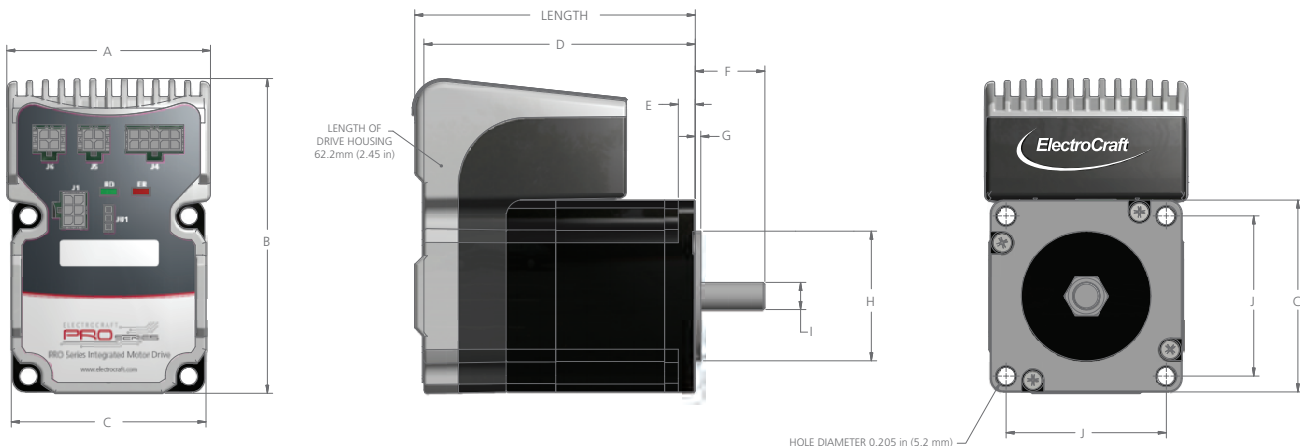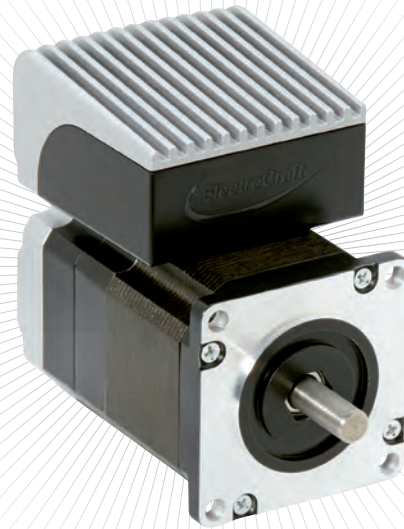ue and high accuracy in a robust, compact package. Three frame lengths are available in this size, offering holding torque of up to 170 Ncm (241 oz-in).

RoHS

CE

LENGTH OF DRIVE HOUSING 62.2mm (2.45 in)

HOLE DIAMETER 0.205 in (5.2 mm)

Model	Units	Length	A	B	C	D	E	F	G	H	I	J
PT56-A64	mm	70.94	59.86	92.51	57.21	68.25	5	20.45±0.76	1.6	38.1±0.05	7.98-7.99	47.1
	inch	2.79	2.36	3.64	2.25	2.69	0.2	0.81±0.03	0.063	1.5±0.002	0.314-0.3145	1.85
PT56-A106	mm	82.44	59.86	92.51	57.21	79.75	5	20.45±0.76	1.6	38.1±0.05	7.98-7.99	47.1
	inch	3.25	2.36	3.64	2.25	3.14	0.2	0.81±0.03	0.063	1.5±0.002	0.314-0.3145	1.85
PT56-A170	mm	104.94	59.86	92.51	57.21	102.25	5	20.45±0.76	1.6	38.1±0.05	7.98-7.99	47.1
	inch	4.13	2.36	3.64	2.25	4.03	0.2	0.81±0.03	0.063	1.5±0.002	0.314-0.3145	1.85

Available with ¼" shaft. See page 26 for NEMA sizes.

Parameter

Motor designation	PT56-A64	PT56-A106	PT56-A170	Motor designation	PT56-A64	PT56-A106	PT56-A170
Rated Input Voltage *VDC*		12 – 48		Rotor Inertia *Kg.cm² (oz-in sec²)*	0.141 (0.00198)	0.248 (0.0035)	0.430 (0.0061)
Frame length *mm (in)*	71 (2.79)	82 (3.25)	105 (4.13)	Motor Rated Current *A*		4.2	
Holding Torque *Ncm (oz-in)*	64 (91)	106 (150)	170 (241)	Phase Resistance *Ohm*	0.6	0.8	
Step Angle *°/step*		1.8		Phase Inductance *mH*	2.0	3.5	4.8
Weight Kg (oz)	0.7 (24)	0.9 (31)	1.24 (44)	*Typical weight. May vary with options selected.			

Rated operating temperature 40°C

Torque/speed curves

PT56-A64

Speed (Rev/min)

Torque (Ncm) / Torque (oz.in) vs Speed (Half Steps/sec)

- PT56-A64 24V
- PT56-A64 48V

PT56-A106

Speed (Rev/min)

Torque (Ncm) / Torque (oz.in) vs Speed (Half steps/sec)

- PT56-A106 24V
- PT56-A106 48V

PT56-A170

Speed (Rev/min)

Torque (Ncm) / Torque (oz.in) vs Speed (Half steps/sec)

- PT56-A170 24V
- PT56-A170 48V
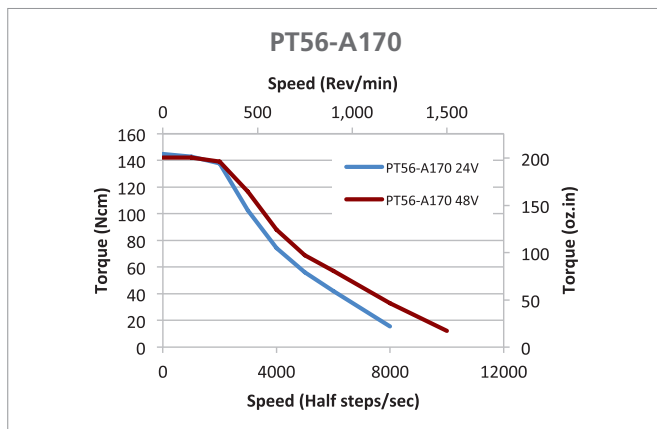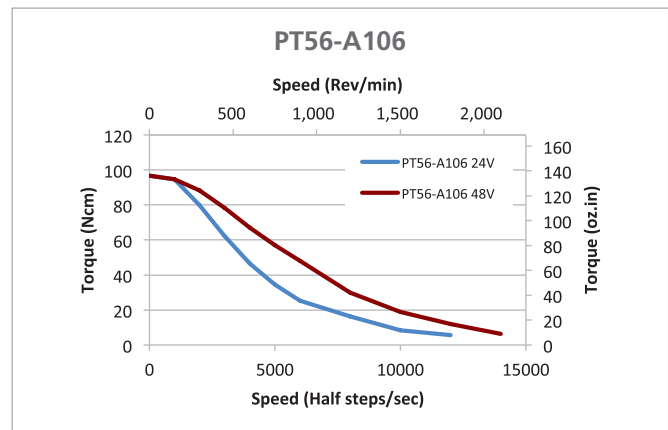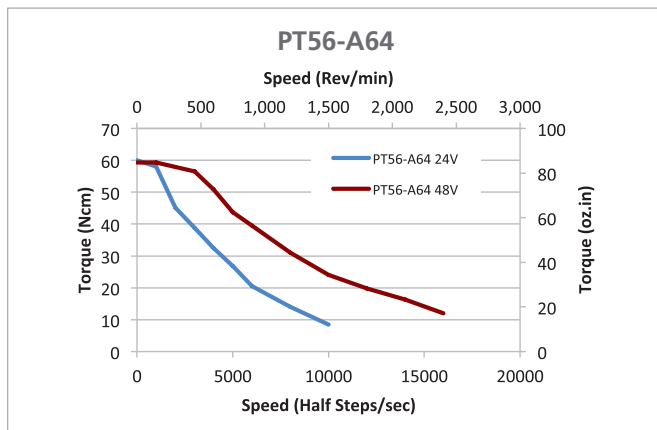
Order part code for the PT56-A170V48A-0-D-CAN

PT	56	-	A	170	V	48	-	0	D	CAN	See fold-out in back of brochure for more information.
Motor technology	Frame size		Drive type	Holding torque		Voltage		Front Shaft	Feedback	Network	

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PR42: Brushless DC IMDC

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The ElectroCraft PR42 integrated brushless DC motor drive controllers are designed for high-precision applications. Each combines a high-performance neodymium brushless motor with a fully-programmable PRO Series controller, providing a high level of control accuracy in a very compact package. Four frame lengths are available in this PR42 variant, providing peak torque of up to 96 Ncm (136oz-in) and speeds of up to 11,400RPM.
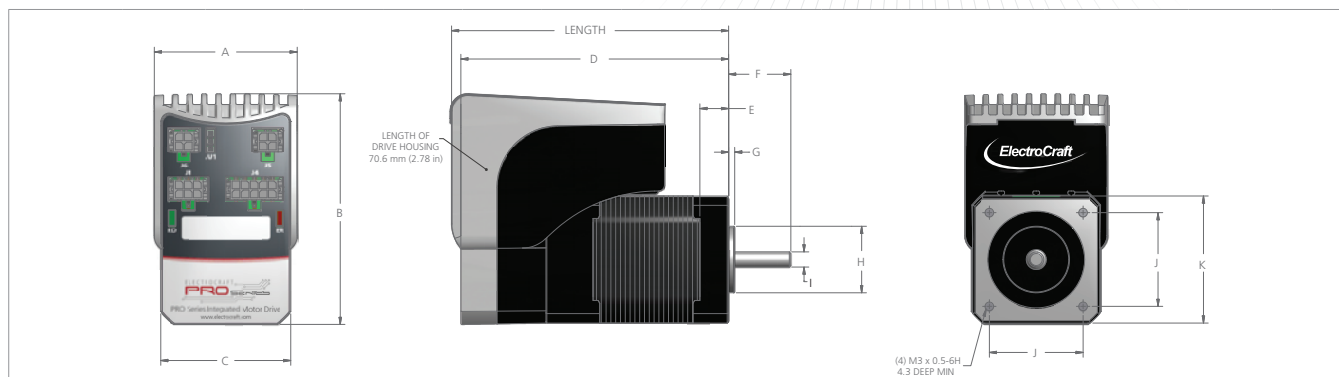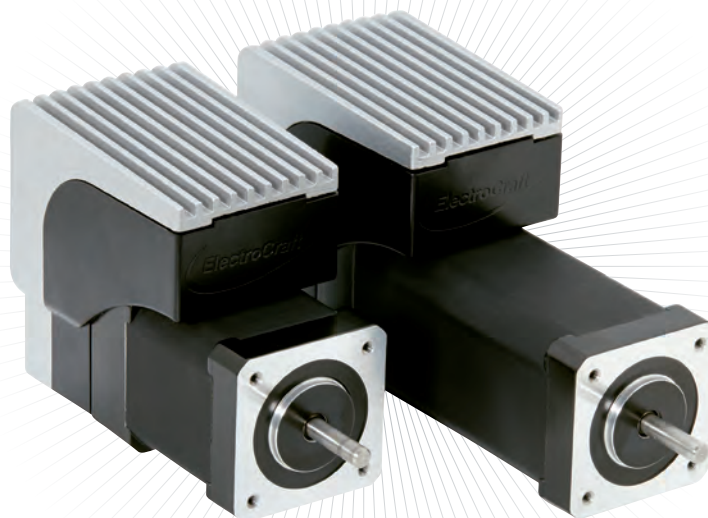
Model	Units	Length	A	B	C	D	E	F	G	H	I	J	K
PR42-A8	mm	71	47.24	76.3	42.96	67.8	9.5	20.59±0.76	2.01	21.97 - 22	4.99 - 5	30.99	42
	inch	2.8	1.86	3.0	1.69	2.7	0.37	0.81±0.03	0.08	0.8648-0.866	0.1963 - 0.1967	1.22	1.65
PR42-A16	mm	91.6	47.24	76.3	42.96	88.52	9.5	20.59±0.76	2.01	21.97 - 22	4.99 - 5	30.99	42
	inch	3.6	1.86	3.0	1.69	3.48	0.37	0.81±0.03	0.08	0.8648-0.866	0.1963 - 0.1967	1.22	1.65
PR42-A25	mm	109	47.24	76.3	42.96	105.9	9.5	20.59±0.76	2.01	21.97-22	4.99 - 5	30.99	42
	inch	4.3	1.86	3.0	1.69	4.17	0.37	0.81±0.03	0.08	0.8648-0.866	0.1963 - 0.1967	1.22	1.65
PR42-A32	mm	131.1	47.24	76.3	42.96	128.52	9.5	20.59±0.76	2.01	21.97-22	4.99 - 5	30.99	42
	inch	5.2	1.86	3.0	1.69	5.06	0.37	0.81±0.03	0.08	0.8648-0.866	0.1963 - 0.1967	1.22	1.65

Parameter

Motor designation	PR42-A8	PR42-A16	PR42-A25	PR42-A32	Motor designation	PR42-A8	PR42-A16	PR42-A25	PR42-A32
Rated input voltage *VDC*	12 – 48				Rotor Inertia *Kg.cm² (oz-in sec²)*	0.0565 (0.0008)	0.083 (0.00117)	0.113 (0.0016)	0.134 (0.0019)
Frame length *mm (in)*	71 (2.8)	91.6 (3.6)	109 (4.3)	131.1 (5.2)	No Load Speed *Rev/min*	11,400	10,450	6,800	4,910
Encoder *lines/rev*	1000, 2000, 5000				Phase Resistance *Ohm*	2.5	1.07	1.3	1.95
Continuous Torque *Ncm (oz-in)*	8 (12)	16 (22.7)	25 (36)	32 (45.5)	Phase Inductance *mH*	2.0	1.2	1.4	2.3
Peak Torque *Ncm (oz-in)*	32 (45)	42 (60)	71 (100)	96 (136)	Torque Constant *Ncm/A (oz-in/A)*	4.0	4.3		
*Motor weight *Kg (oz)*	0.35 (12.5)	0.57 (20.1)	0.77 (27)	0.95 (33.5)	Voltage Constant *V/kRPM*	4.2	4.5	7.1	

*Typical weight. May vary with options selected.

Rated operating temperature 40ºC

Torque/speed curves

PR42-A8 at 24V

PR42-A8 at 48V

PR42-A16 at 24V

PR42-A16 at 48V

PR42-A25 at 24V

PR42-A25 at 48V

PR42-A32 at 24V

PR42-A32 at 48V
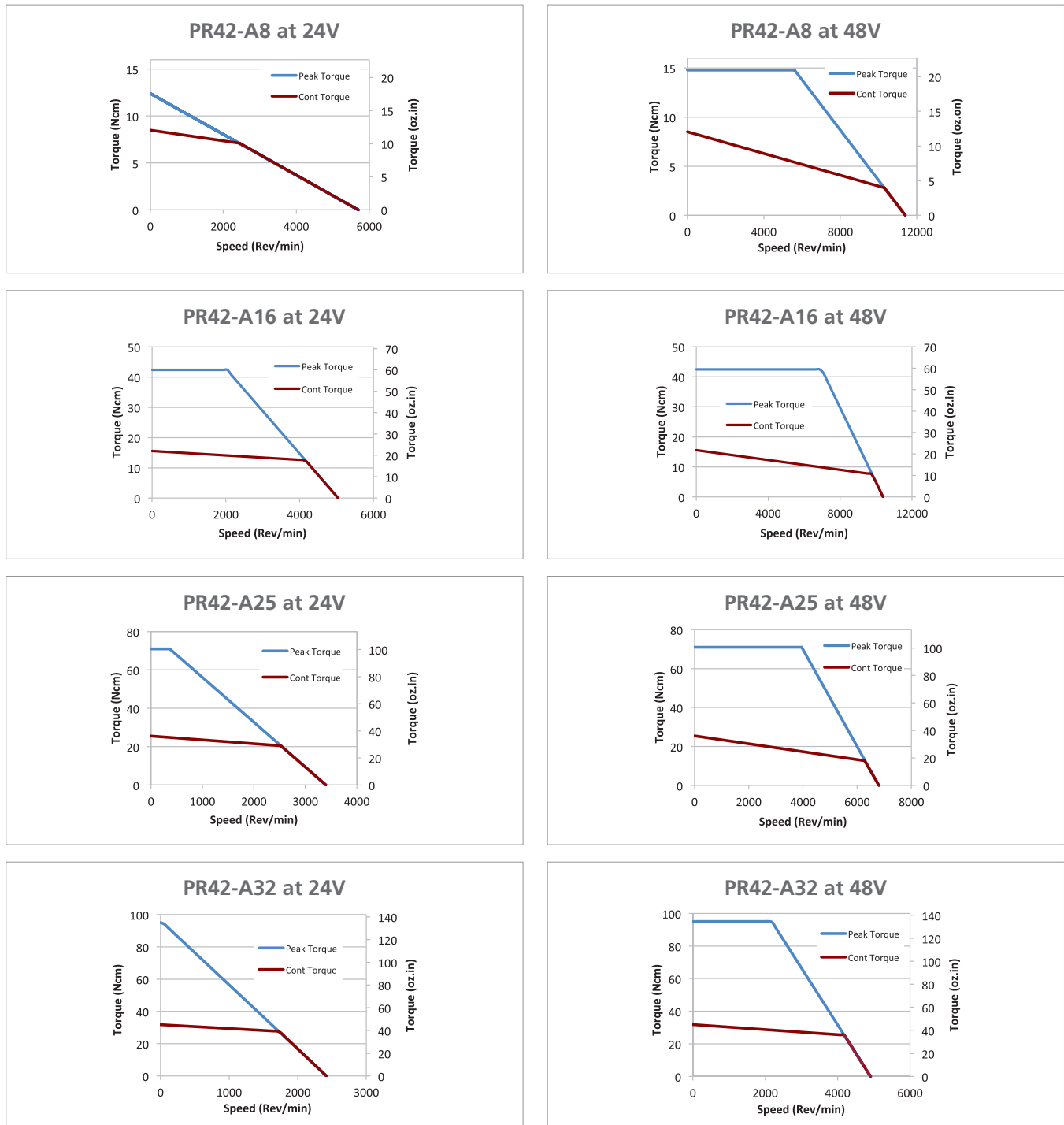
Order part code for the PR42-A16V48A-0-D-CAN

PR	42	-	A	16	V	48	A	-	0	-	D	CAN
Motor technology	Frame size		Drive type	Continuous torque		Voltage	Drive version		Front shaft		Feedback	Network

ElectroCraft PRO Series Integrated Motor Drive Controller

PR60: Brushless DC IMDC

ELECTROCRAFT
PRO SERIES

The ElectroCraft PR60 integrated motor drive controllers are the highest-performance products in the range. Each combines a high-performance neodymium brushless motor with a fully programmable controller to give high levels of control in a compact package. The PR60 is available in four frame sizes, providing peak torque of up to 89 Ncm (123 oz-in) and speeds of over 9,000 RPM.
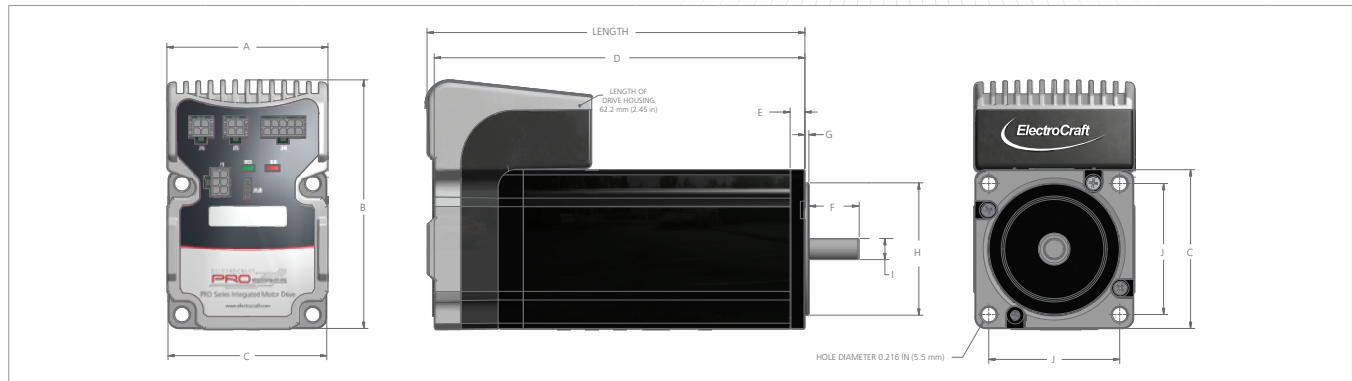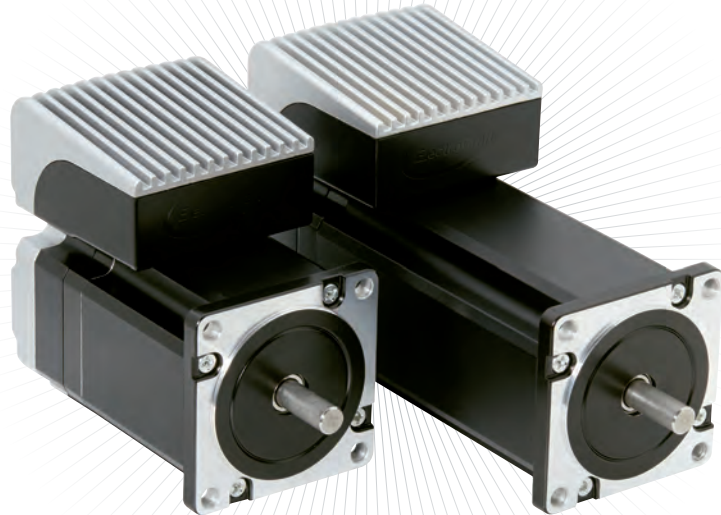
Model	Units	Length	A	B	C	D	E	F	G	H	I	J
PR60-A18	mm	82	60.86	93.94	60	79.2	5.59	20.5±0.76	1.5	49.95 - 50	7.98 - 7.99	49.5
	inch	3.23	2.4	3.7	2.36	3.12	0.22	0.81±0.03	0.059	1.967 - 1.969	0.314 - 0.3145	1.95
PR60-A25	mm	92	60.86	93.94	60	89.25	5.59	20.5±0.76	1.5	49.95 - 50	7.98 - 7.99	49.5
	inch	3.6	2.4	3.7	2.36	3.51	0.22	0.81±0.03	0.059	1.967 - 1.969	0.314 - 0.3145	1.95
PR60-A38	mm	117.3	60.86	93.94	60	114.8	5.59	20.5±0.76	1.5	49.95 - 50	7.98 - 7.99	49.5
	inch	4.62	2.4	3.7	2.36	4.52	0.22	0.81±0.03	0.059	1.967 - 1.969	0.314 - 0.3145	1.95
PR60-A52	mm	143	60.86	93.94	60	140.06	5.59	20.5±0.76	1.5	49.95 - 50	7.98 - 7.99	49.5
	inch	5.6	2.4	3.7	2.36	5.51	0.22	0.81±0.03	0.059	1.967 - 1.969	0.314 - 0.3145	1.95

Parameter

Motor designation	PR60-A18	PR60-A25	PR60-A38	PR60-A52	Motor designation	PR60-A18	PR60-A25	PR60-A38	PR60-A52
Rated input voltage *VDC*	12 – 48				Rotor Inertia *$Kg.cm^2$ (oz-in sec^2)*	0.106 (0.0015)	0.205 (0.0029)	0.332 (0.0047)	0.509 (0.0072)
Frame length *mm (in)*	82 (3.2)	92 (3.6)	117 (4.6)	143 (5.6)	No Load Speed *Rev/min*	8,000	9,460	4,800	3,980
Encoder *lines/rev*	1000, 2000, 5000				Phase Resistance *Ohm*	3.6	1.3	1.6	1.3
Continuous Torque *Ncm (oz-in)*	18 (25.5)	25 (35.4)	38 (53.8)	52 (73.6)	Phase Inductance *mH*	4.6	1.8	2.4	2.0
Peak Torque *Ncm (oz-in)*	35 (49.6)	56.5 (80.0)	80 (113)	89 (126)	Torque Constant *Ncm/A (oz-in/A)*	6.4	5.3		
*Motor weight *Kg (oz)*	0.62 (22)	0.88 (31)	1.2 (42)	1.5 (53)	Voltage Constant *V/kRPM*	6.7	5.5	10.0	

*Typical weight. May vary with options selected.   Rated operating temperature 40°C

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Torque/speed curves

PR60-A18 at 24V

PR60-A18 at 48V

PR60-A25 at 24V

PR60-A25 at 48V

PR60-A38 at 24V

PR60-A38 at 48V

PR60-A52 at 24V

PR60-A52 at 48V
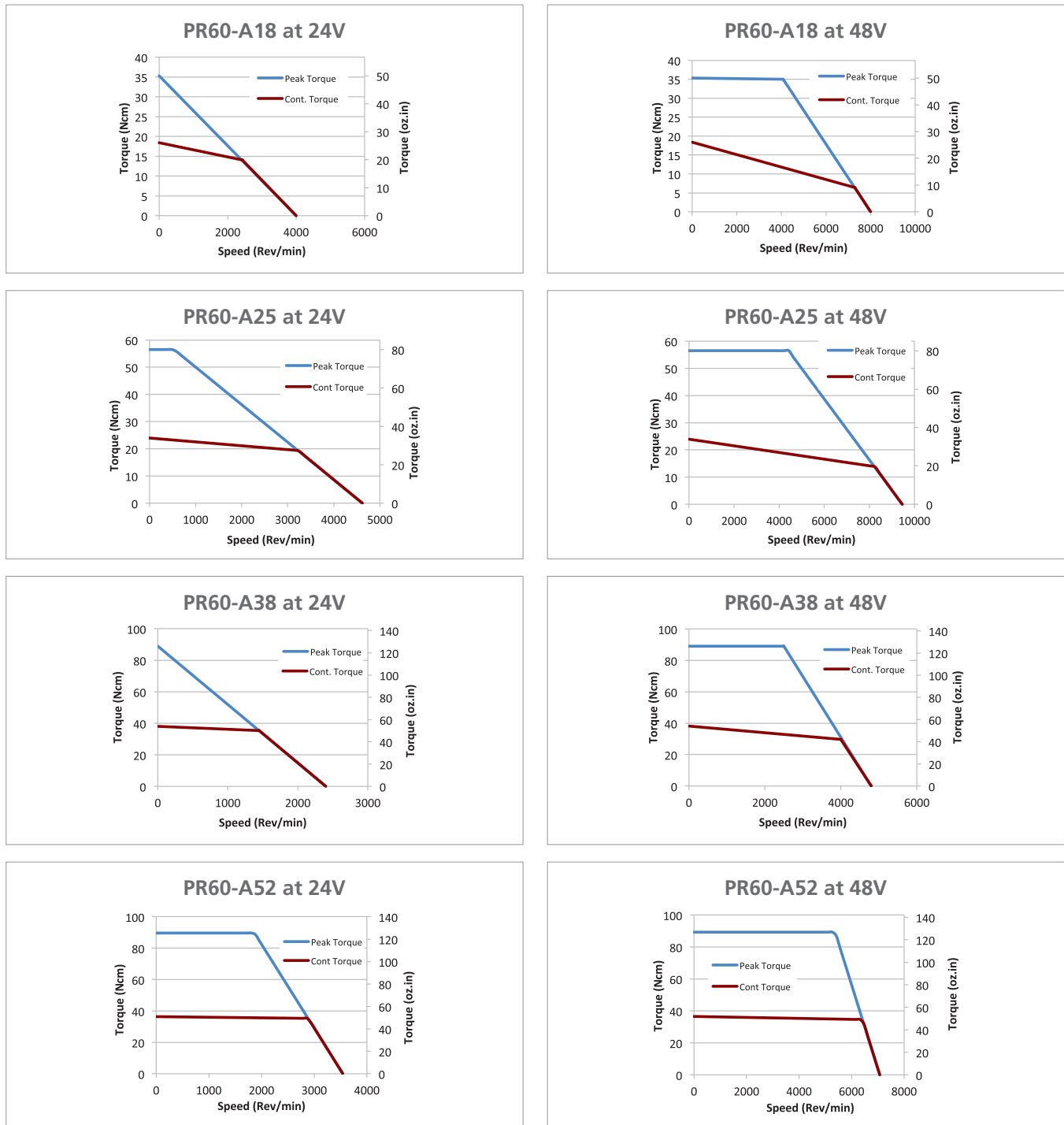
Order part code for the PR60-A25V48A-0-D-CAN

PR	60	-	A	25	V	48	A	-	0	-	D	CAN
Motor technology	Frame size		Drive type	Continuous torque		Voltage	Drive version		Front shaft		Feedback	Network

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PS42: Stepper Actuator IMDC

The ElectroCraft PS42 IMDC Stepper Actuator is linear motion in its most compact form, enabling users to reduce installation costs and machine footprint by installing simpler control and cabling architectures. It is available in two forms, as a linear actuator or a leadscrew motor. The integrated PRO Series drive makes the PS42 highly configurable, incorporating the full range of sequence control, I/O and communication options. Versions with ballscrews and special material parts are available for custom application-specific designs – contact ElectroCraft for more information. The PS42 is available with a range of 1/4 inch standard threads, providing resolutions of up to .00031 in (.00787 mm) in full step open-loop mode. Higher resolutions are available in micro-stepping and closed-loop position control mode.
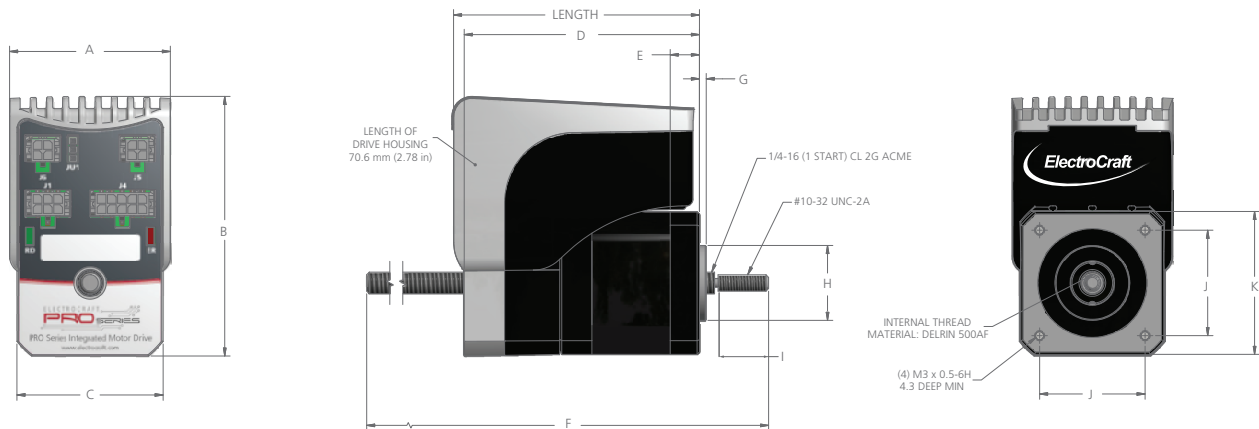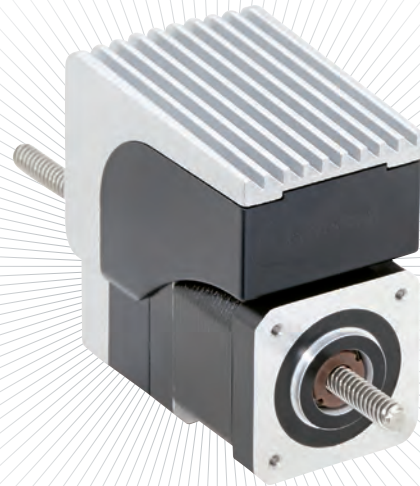
Model	Units	Length	A	B	C	D	E	F	G	H	I	J	K
PS42-A44	mm	72.27	47.24	76.3	1.69	69.12	8.6	152.4±0.8	2.0	21.97-22	12.75	31.0	42.01
	inch	2.85	1.86	3.0	42.96	2.72	0.34	6.0±0.03	0.08	0.865-0	0.5	1.22	1.65

Parameter

Motor designation	PS42-A44	No Load Speed @ 24V *RPM*	1050
Rated input voltage *VDC*	12 – 48	No Load Speed @ 48V *RPM*	2100
Frame length *mm (in)*	72 (2.85)	Rotor Inertia *Kg.cm² (oz-in sec²)*	0.064 (0.00091)
Step Angle *°/step*	1.8	Phase Resistance *Ohm*	1.25
Holding Torque *Ncm (oz-in)*	44 (62)	Phase Inductance *mH*	2.32
Weight* *Kg (oz)*	0.47 (16.6)		

*Typical weight. May vary with options selected.   Rated operating temperature 40ºC

Force/speed curves

PS42-A44 at 24V

PS42-A44 at 48V
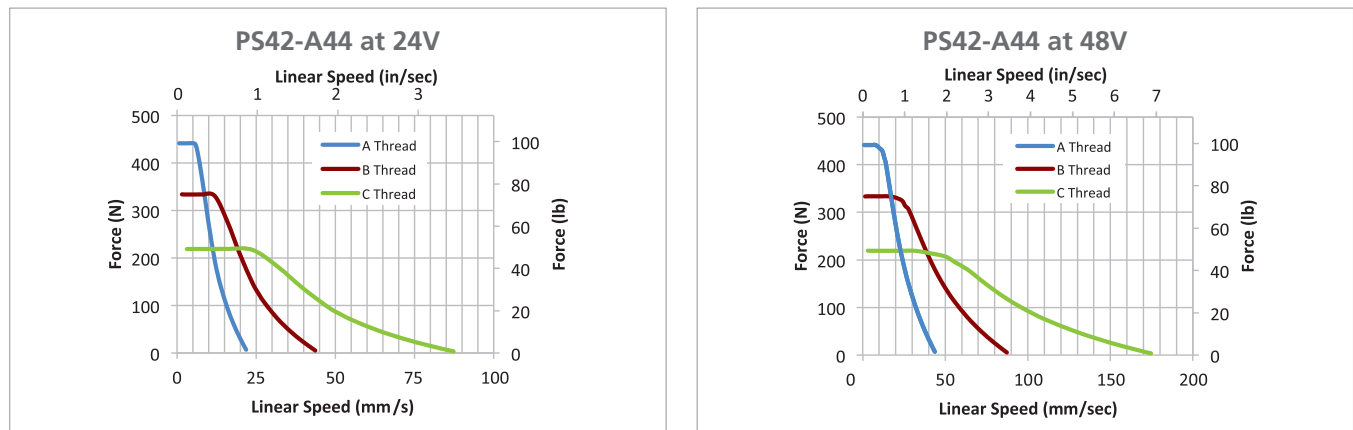
The linear motion characteristics of the actuator can be calculated using the Pitch of the thread and its number of starts. The linear distance the actuator moves for each revolution of the motor is known as the Lead.

Lead = Pitch x number of starts.

Thus a 1/4 - 16 ACME (2S) ACME thread will have a diameter of 1/4 inch, a Pitch of 1/16 of an inch and two starts, giving a lead of 1/8 inch. The motion of stepper motors is sometimes described in terms of their step count. ElectroCraft Integrated Stepper Actuators have a step count of 200 per revolution. In this instance, the Lead is equivalent to 200 steps. So for a 1/4 - 16 (2S) ACME thread, 200 steps will be equivalent to 1/8 inch of linear motion.

Thread options for the PS42

Thread	Description	Starts	Diameter *(in)*	Pitch *(in)*	Lead *(in)*	Resolution at 200 steps/rev *(in)*
A	1/4 - 16 ACME (1S)	1	1/4	1/16	1/16	0.00031
B	1/4 - 16 ACME (2S)	2	1/4	1/16	1/8	0.00063
C	1/4 - 16 ACME (4S)	4	1/4	1/16	1/4	0.00125
*E	1/4 - 20 ACME (1S)	1	1/4	1/20	1/20	0.00025
*F	1/4 - 20 ACME (4S)	4	1/4	1/20	1/5	0.001
*J	1/4 - 40 UNI (1S)	1	1/4	1/40	1/40	0.000125
*V	1/4 - 32 ACME (1S)	1	1/4	1/32	1/32	0.000156

* These threads available on request. More information on threads can be found on Page 24.

Order part code for the PS42-A44V48A-0AB4-D-CAN

PS	42	-	A	44	V	48	A	-	0	A	B	4	-	D	-	CAN	See fold-out in back of brochure for more information.
Motor technology	Frame size		Drive type	Holding torque		Voltage	Drive version		Linear actuator	Thread	Screw length	End mod		Feedback		Network	

PS56: Stepper Actuator IMDC

ELECTROCRAFT
PRO SERIES

The PS56 is the larger frame size variant of the ElectroCraft integrated Stepper Actuator IMDC and is available as a linear actuator or lead screw motor. The integrated PRO Series drive makes the PS56 highly configurable, incorporating the full range of sequence control, I/O and communications options. This makes it ideal for incorporation into centralized or distributed architectures where controlled high-power force is needed. Special versions with ballscrews and special material parts are available for custom application-specific designs – contact ElectroCraft for more information. The PS56 is available with a range of 3/8 inch standard threads, providing resolutions of up to .00025 in (.00635 mm) in full step open-loop mode. Even higher resolutions are available in micro-stepping and closed-loop position control mode.
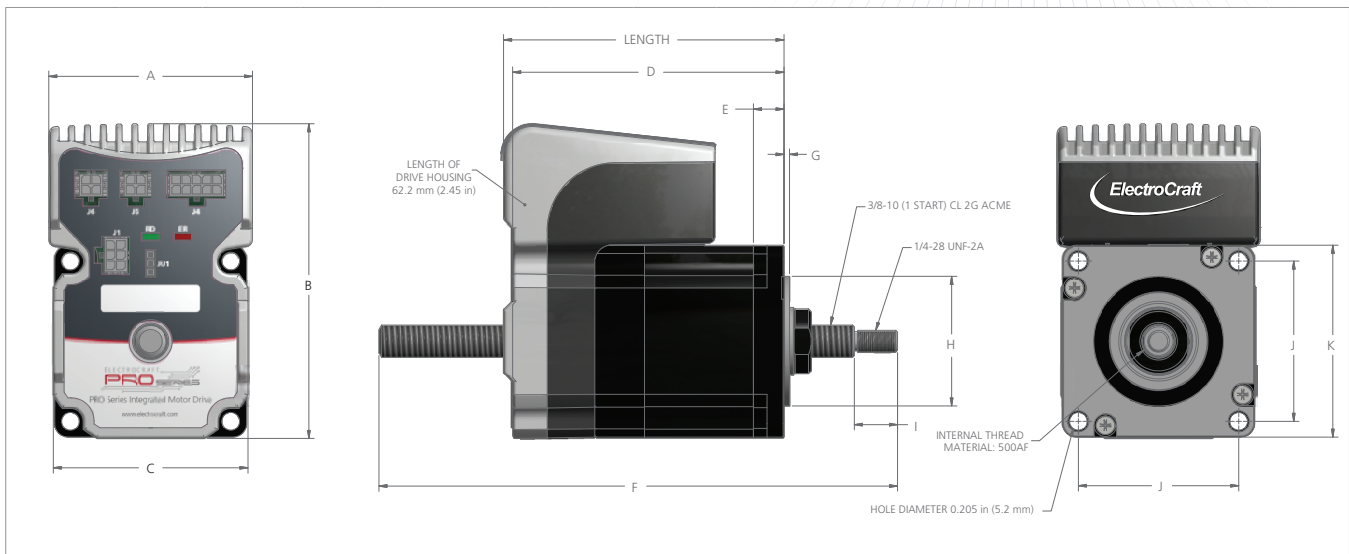
Model	Units	Length	A	B	C	D	E	F	G	H	I	J	K
PS56-A64	mm	71	59.86	92.51	57.21	79.75	9.0	152.4±0.76	1.6	38.1±0.05	12.7	47.1	56.4
	inch	2.8	2.36	3.64	2.25	3.14	0.35	6±0.03	0.06	1.5±0.002	0.5	1.85	2.22
PS56-A106	mm	82	59.86	92.51	57.21	79.75	9.0	152.4±0.76	1.6	38.1±0.05	12.7	47.1	56.4
	inch	3.2	2.36	3.64	2.25	3.14	0.35	6±0.03	0.06	1.5±0.002	0.5	1.85	2.22

Parameter

| Motor designation	PS56-A64	PS56-A106	Motor designation	PS56-A64	PS56-A106
Rated input voltage *VDC*	12 – 48		No Load Speed @ 24V *RPM*	1100	975
Frame length *mm (in)*	71 (2.8)	82 (3.2)	No Load Speed @ 48V *RPM*	2250	2100
Step Angle *°/step*	1.8	1.8	Rotor Inertia *Kg.cm² (oz-in sec²)*	0.155 (0.0022)	0.26 (0.0037)
Holding Torque *Ncm (oz-in)*	64 (90)	106 (130)	Phase Resistance *Ohm*	0.6	0.8
Weight* *Kg (oz)*	0.69 (24)	0.9 (31.4)	Phase Inductance *mH*	2.0	

*Typical weight. May vary with options selected.

Rated operating temperature 40°C

Force/speed curves

PS56-A64 at 24V

PS56-A64 at 48V

PS56-A106 at 24V

PS56-A106 at 48V
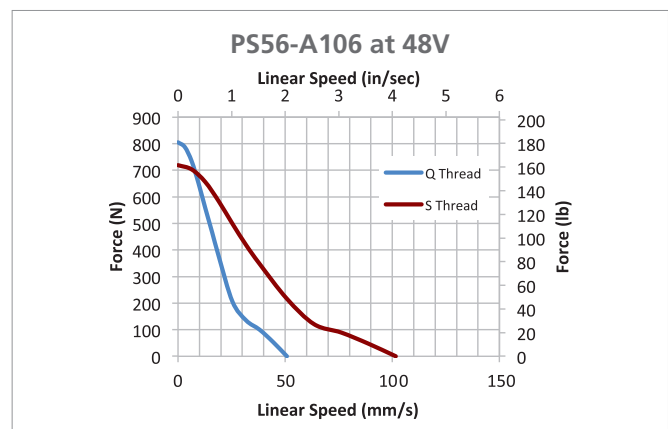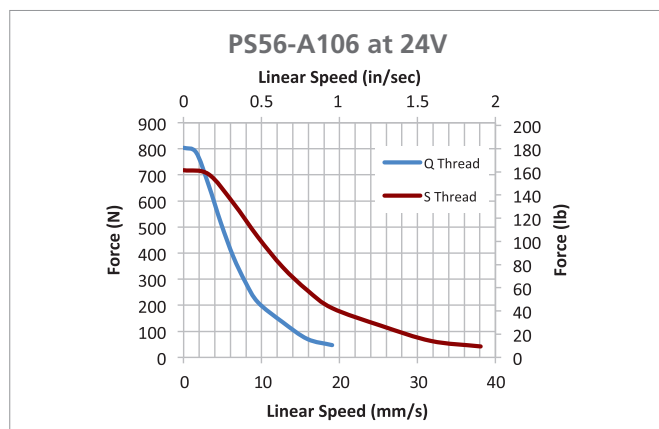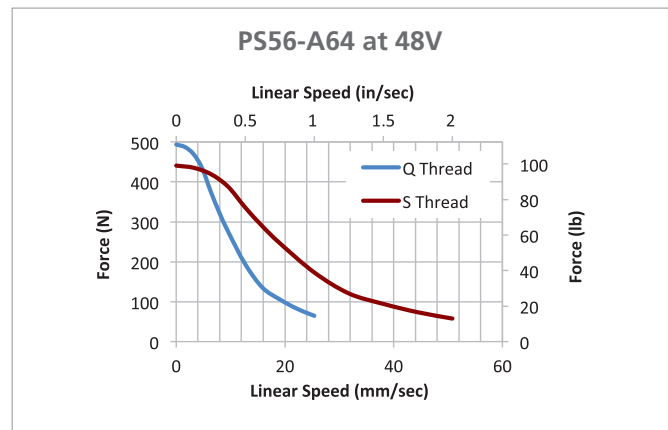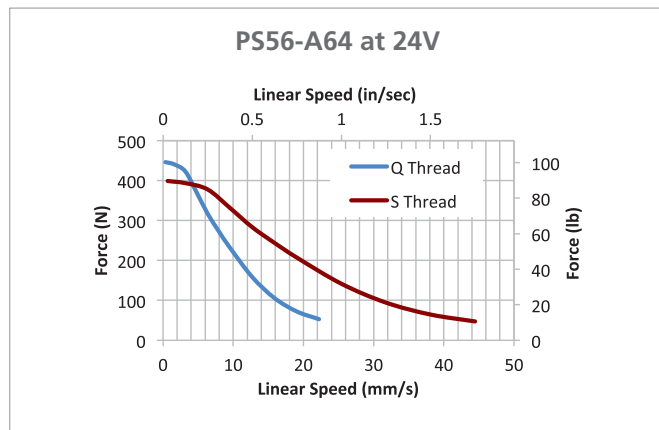
The linear motion characteristics of the actuator can be calculated using the Pitch of the thread and its number of starts. The linear distance the actuator moves for each revolution of the motor is known as the Lead.

Lead = Pitch x number of starts.

Thus a 3/8 - 12 ACME (2S) thread will have a diameter of 3/8 of an inch, a Pitch of 1/12 of an inch and two starts, giving a lead of 1/6 inch. The motion of stepper motors is sometimes described in terms of their step count. ElectroCraft Integrated Stepper Actuators have a step count of 200 per revolution. In this instance, the Lead is equivalent to 200 steps. So for a 3/8 - 12 ACME (2S) thread, 200 steps will be equivalent to 1/6 of an inch of linear motion.

Thread options for the PS56

Thread	Description	Starts	Diameter *(in)*	Pitch *(in)*	Lead *(in)*	Resolution at 200 steps/rev *(in)*
*L	3/8 - 12 ACME (2S)	2	3/8	1/12	1/16	0.00083
Q	3/8 - 20 ACME (1S)	1	3/8	1/20	1/20	0.00025
S	3/8 - 10 ACME (1S)	1	3/8	1/10	1/10	0.0005
*T	3/8 - 10 ACME (1S)	1	3/8	1/16	1/16	0.0003
*W	3/8 - 12 ACME (1S)	1	3/8	1/12	1/12	0.00042

* These threads available on request.
More information on threads can be found on Page 24.

Order part code for the PS56-A106V48A-0SB7-D-CAN

PS	56	-	A	106	V	48	A	-	0	S	B	7	-	D	-	CAN
Motor technology	Frame size		Drive type	Holding torque		Voltage	Drive version		Linear actuator	Thread	Screw length	End mod		Feedback		Network

Product Range of
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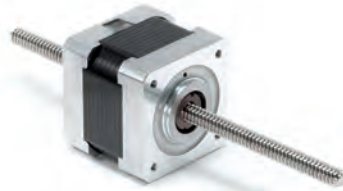
ElectroCraft
AxialPower™
Linear Actuator

Based on modified hybrid steppers, PMDC and BLDC motors, our family of AxialPower linear actuators are built to last. Our unique approach to linear motion with low-friction, polymer rotating nuts and stainless steel leadscrews provides high force and linear precision in the smallest packages available.

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PMDC

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With a choice of output ratios, our MobilePower line of products helps power battery-operated vehicles from wheelchairs to lift trucks. And, to increase durability and decrease noise levels, the robust all metallic gears are hobbed to a precision AGMA 9-Class.

ElectroCraft
SolidPower™ Plus
Housed AC

High starting torques and stator windings matched to your application ensure the SolidPower product provides lasting performance. The dynamically balanced, skewed rotor bars and precision-machined fits keep vibration levels at a minimum.

ElectroCraft
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C-Frame AC

Our AC shaded-pole motor, the SurePower product, can be utilized for a wide range of air-moving applications – perfect for the rigors of refrigeration and commercial food equipment applications.

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ElectroCraft PRO Series Integrated Motor Drive Controller

Family Part Number Configurator

Rotary

Drive Type		Torque (Ncm)					Voltage	Drive Version
A	Advanced	44	64	PT56	8	PR42	18	PR60	48	A
		55	PT42	106	16	25			
				170	25	38	52		

Part number example: **P T 42 - A 55 V 48 A - 0 - D - CAN**

Type		Motor Technology		Frame Size (mm)		Front Shaft		Feedback		Network
P	Pro Series	T	Stepper	42	Stepper	0	Round, metric	X	None	CAN
		R	Brushless	56		1	Flat, metric	D	1000	CAT
				42	Brushless	2	Round, NEMA	L	2000	
				60		3	Flat, NEMA	M	5000*	

*5000 line encoder speed limited to 8500RPM

Linear

Product		Thread		Screw Length		End Mod		Feedback		Network
0	Linear actuator - Regular	A	1/4-16 ACME (1S)	X	None	0	No End Mod	X	None	CAN
1	Leadscrew Motor	B	1/4-16 ACME (2S)	A	3"	1	6-32 UNC	D	1000	CAT
		C	1/4-16 ACME (4S)	B	6"	2	M2.5 X 0.45	L	2000	
		E	1/4-20 ACME (1S)	C	12"	3	0.098/0.097 Dia [2.5mm]	M	5000*	
		F	1/4-20 ACME (4S)	D	18"	4	10-32 UNF			
		J	1/4-40 UN (1S)	E	24"	5	M5 X 0.8			
		L	3/8-12 ACME (2S)			6	0.196/0.195 Dia [5mm]			
		Q	3/8-20 ACME (1S)			7	1/4-28 UNF			
		S	3/8-10 ACME (1S)			8	M6 X 1.0			
		T	3/8-16 ACME (1S)			9	0.235/0.236 Dia [6mm]			
		W	3/8-12 ACME (1S)							
		V	1/4-32 ACME (1S)							

Part number example: **P S 42 - A 44 V 48 A - 0 A B 4 - X - CAN**

Type		Motor Technology		Frame Size (mm)		Drive Type		Torque (Ncm)				Voltage	Drive Version
P	Pro Series	S	Stepper	42	Stepper	A	Advanced	44	PS42	64	PS56	48	
				56						106			

Accessories

Evaluation Kit

PN	Description
2000710	PT42-A55V48A-0-X-CAN Open-loop Stepper
2000711	PT42-A55V48A-0-D-CAN Closed-loop Stepper
2000752	PT56-A106V48A-0-X-CAN Open-loop Stepper
2000753	PT56-A106V48A-0-D-CAN Closed-loop Stepper
2000712	PR42-A16V48A-0-D-CAN Closed-loop Brushless
2000713	PR42-A32V48A-0-D-CAN Closed-loop Brushless
2000754	PR60-A25V48A-0-D-CAN Closed-loop Brushless
2000755	PR60-A52V48A-0-D-CAN Closed-loop Brushless
2000714	PS42-A44V48A-0AB4-X-CAN Open-loop Integrated Stepper Linear Actuator
2000715	PS42-A44V48A-0AB4-D-CAN Closed-loop Integrated Stepper Linear Actuator
2000756	PS56-A106V48A-0SB7-X-CAN Open-loop Integrated Stepper Linear Actuator
2000757	PS56-A106V48A-0SB7-D-CAN Closed-loop Integrated Stepper Linear Actuator

Mating Cable

PN	Description	Length meter
1001359	PRO Series IMDC Interface Cable Kit:	
	PRO Series IMDC Power Connector (J1) to Flying Lead	3
	PRO Series IMDC I/O Connector (J4) to Flying Lead	3
	PRO Series IMDC CAN Interface (J5/J6) to Flying Lead	3
1001360	PRO Series IMDC Power & I/O Cable Kit:	
	PRO Series IMDC Power Connector (J1) to Flying Lead	3
	PRO Series IMDC I/O Connector (J4) to Flying Lead	3

Miscellaneous Accessories

PN	Description
2000685	CompletePower Braking Module With External Bus Capacitance (13W, 4.7 Ohm)

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