



Integrated Motor Drives

PT, PR & PS-Series

Catalog
IMD01EN

ELECTROCRAFT
PRO SERIES

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For over 60 years, ElectroCraft has been helping engineers translate innovative ideas into reality – one reliable motor 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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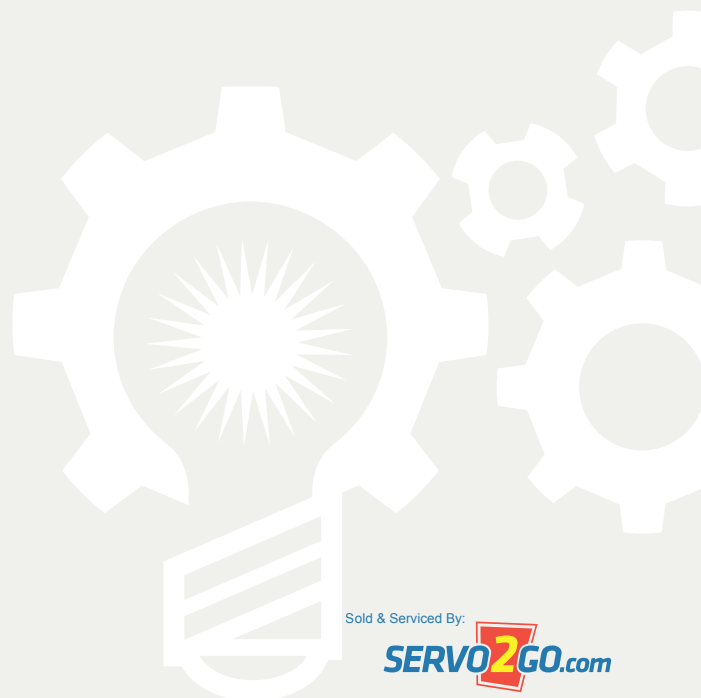
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This guide has been developed as a quick reference tool for ElectroCraft products. It is not intended to replace technical documentation or proper use of standards and codes in installation of product.

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this product must satisfy themselves that all necessary steps have been taken to ensure that each application and use meets all performance and safety requirements, including all applicable laws, regulations, codes and standards.

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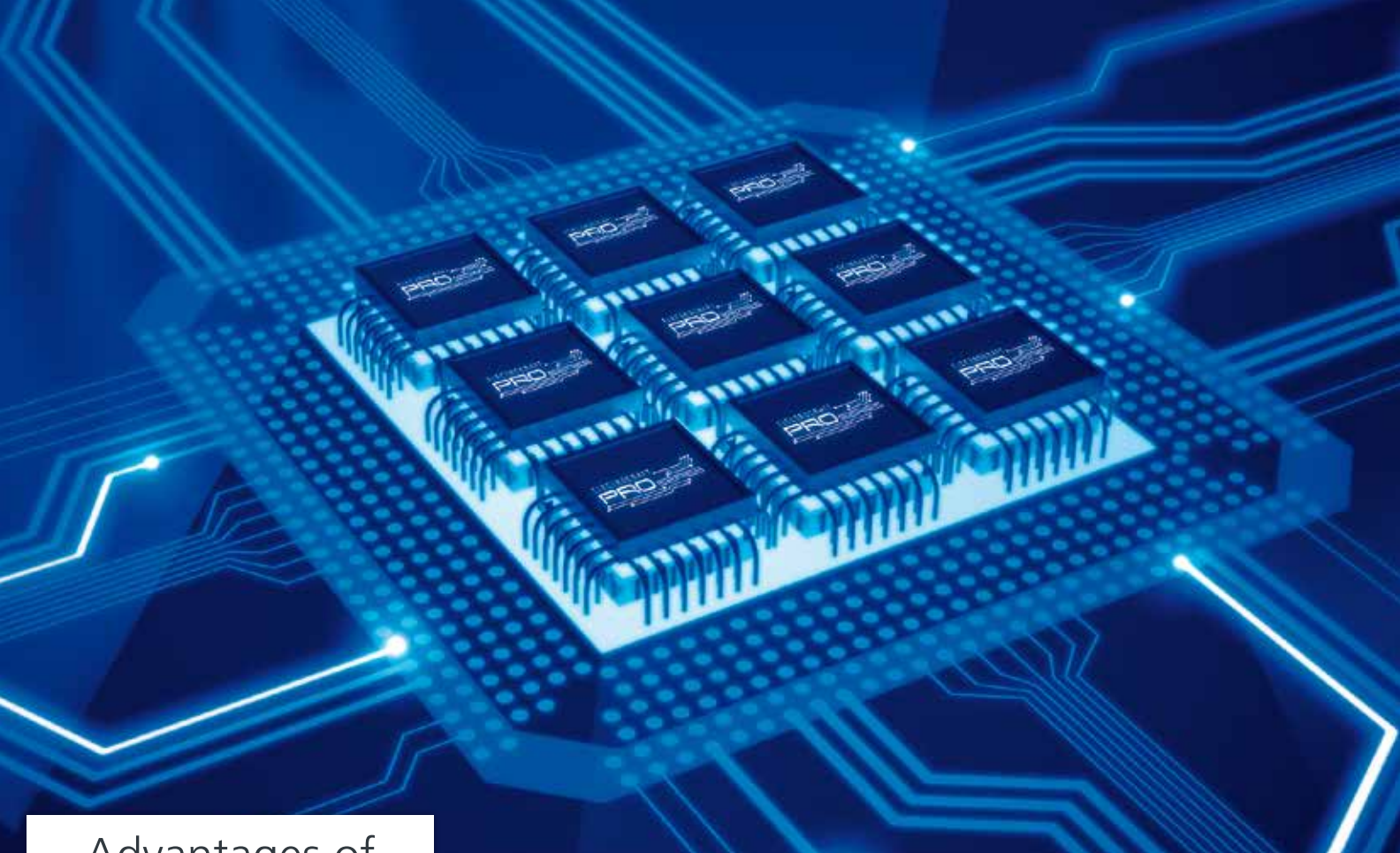
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Advantages of Integrated Motor Drive



ElectroCraft PRO Series Integrated Motor Drives combine our most advanced motor and drive technologies in to 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 motor/drive combination offers a level of functional precision that has never previously been available in a single package.

The Range.

The PRO Series Integrated Motor Drive range includes brushless motor variants, stepper motor variants and linear actuators. Each is ruggedly cased to withstand industrial environments and incorporates a high performance servo drive with 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 motor/drive to serve as either a stand-alone control solution or as part of a fully-integrated multi-axis system.

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The Advantages.

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

Use ElectroCraft's PRO Series Integrated Motor Drive range to

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



Using the PRO Series Integrated Motor Drive 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 is perfectly tuned to match the characteristics of its load.
- reduce EMC issues.
- reduce operation costs.

Highly advanced functions.

The PRO Series Integrated Motor Drive'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.

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Electrocraft PRO Series

Integrated Motor Drive



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 Integrated Motor Drive.

- Intelligent stepper motor drive 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 of holding torque available.
- Separate power and logic supplies.
- Open-loop or closed-loop operation.
- 5 dedicated and programmable digital inputs, 1 analog input.
- 1 dedicated and 1 programmable digital output.
- Internal EEPROM for data and motion program storage.
- CANopen communication bus.

ElectroCraft PR Brushless Integrated DC Motor Drive

- Intelligent brushless servo motor drive with fully-integrated drive, 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 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
- 1 dedicated and 1 programmable digital output.
- Internal EEPROM for data and motion program storage.
- CANopen communication bus.

ElectroCraft PS Stepper Linear Actuator Drive.

- 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 of holding force.
- Speeds up to 174 mm/sec.
- Separate power and logic supplies.
- Open-loop or closed-loop operation.
- 5 dedicated and programmable digital inputs, 1 analog input.
- 1 dedicated and 1 programmable digital output.
- Internal EEPROM for data and motion program storage.
- CANopen communication bus.

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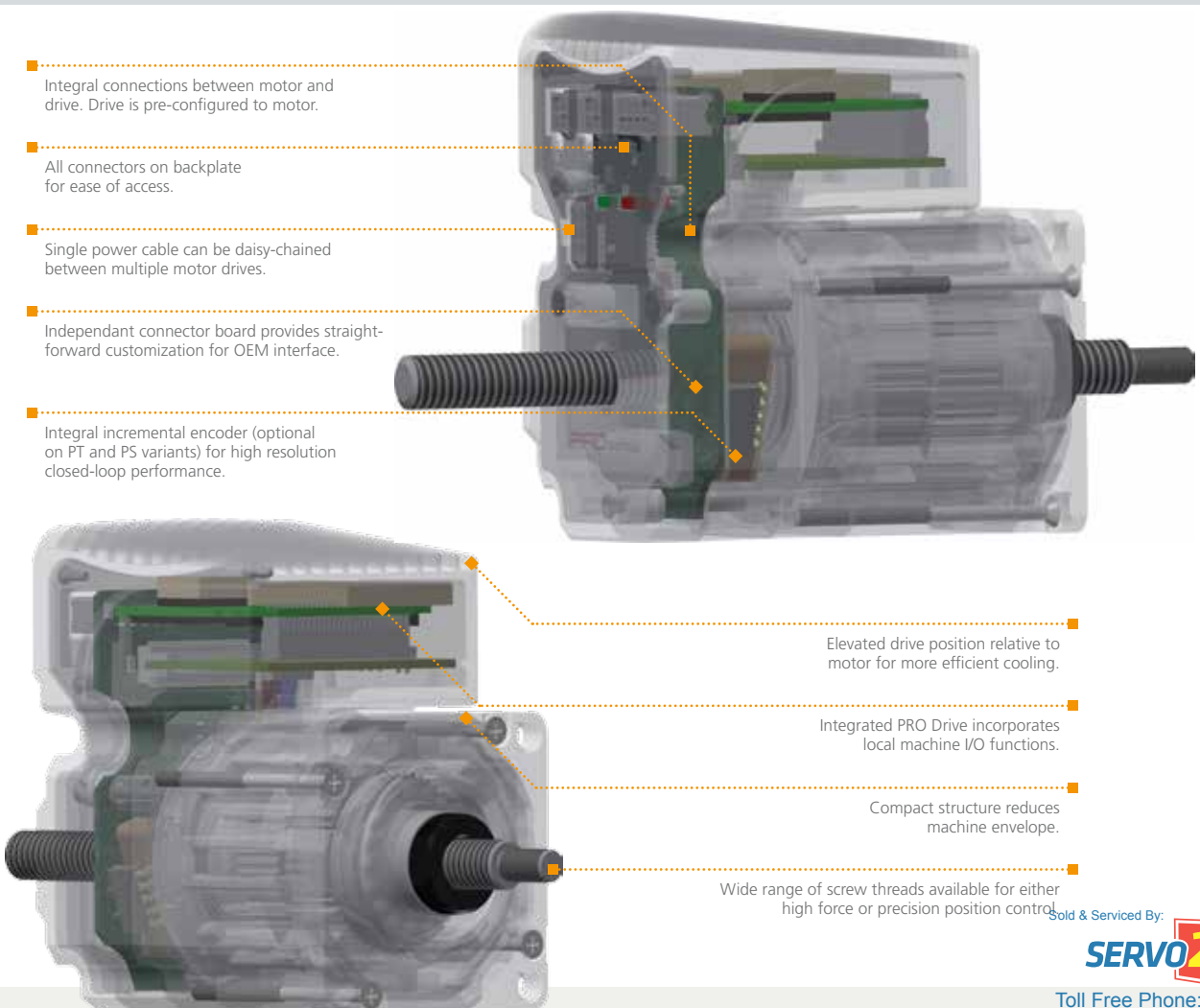
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ElectroCraft PRO Series Integrated Motor Drive

Drive 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-Bus 2.0B up to 1 Mbps/s (CANOpen (CiA 301v4.2 and 402v3.0) protocols).
- Single power supply: 12 – 48V,
- optional logic supply: 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 I²t.



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Integrated Motor Drive

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 |

* PRO-A08V48 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. See the PRO-A08V48 datasheet for reference.

| 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 | | 40 | V _{DC} |
| | Absolute maximum values, continuous | -0.6 | | 42 | V _{DC} |
| | Absolute maximum values, surge (duration ≤10 ms) | -1 | | +45 | V _{DC} |
| Supply Current | +V _{LOG} = 7 V | | 125 | 320 | mA |
| | +V _{LOG} = 12 V | | 80 | 220 | |
| | +V _{LOG} = 24 V | | 50 | 145 | |
| | +V _{LOG} = 40 V | | 40 | 120 | |
| 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 |

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ElectroCraft

MotionPRO Software



ElectroCraft's Pro Series Advanced Integrated Motor Drives 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.

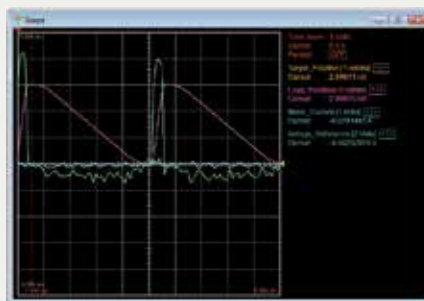


Motion profiles can be programmed online or offline. Operators can

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-sequence configurator 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 Integrated Motor Drive to serve as a stand-alone motion controller, or as part of a multi-axes distributed array, ElectroCraft's MotionPRO configuration software has the flexibility to enable you to set up your system quickly and easily.

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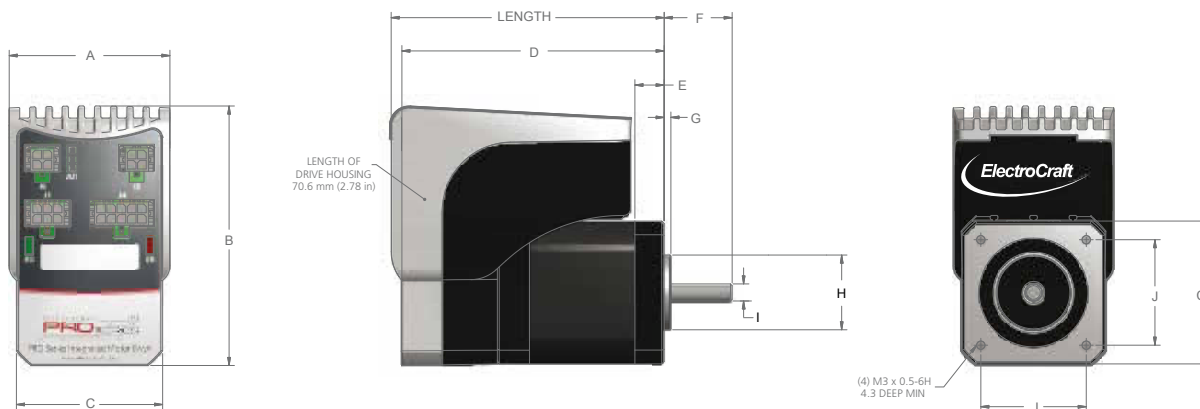
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Electrocraft PRO Series Integrated Motor Drive

PT42: Integrated Stepper motor drive



The PT42 combines the ElectroCraft TorquePower™ Plus 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 |

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 Kg.cm ² (oz-in sec ²) | 0.062 (0.00086) | 0.083 (.0012) |
| Holding Torque Ncm (oz-in) | 44 (62) | 55 (78) | Phase Resistance Ohm | 1.25 | 1.58 |
| Weight* Kg (oz) | 0.47 (16.6) | 0.54 (19) | Phase Inductance mH | 2.32 | Sold & Serviced By 4 |

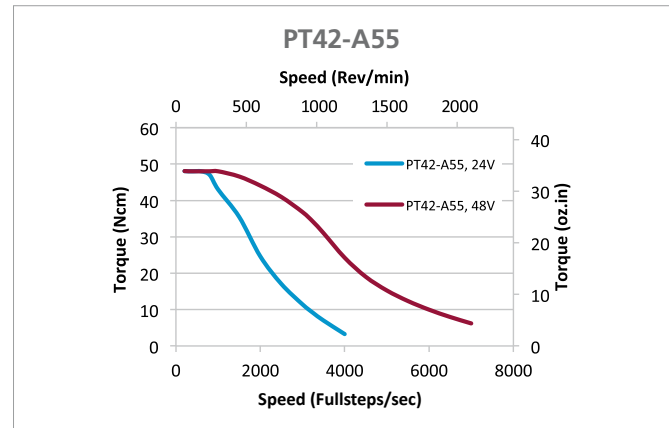
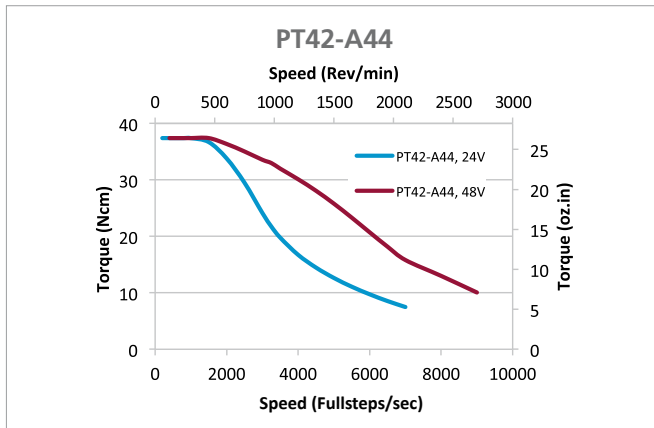
*Typical weight. May vary with options selected.

Rated operating temperature 40°C



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Torque/speed curves

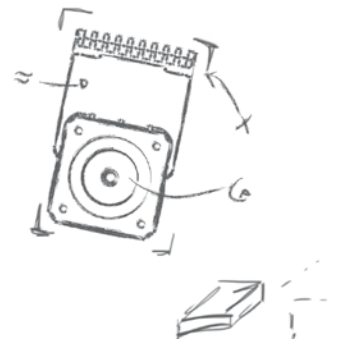
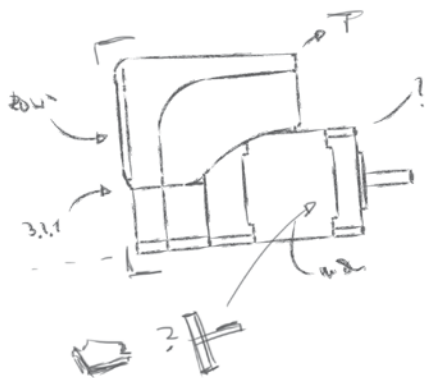


Order part code for the PT42-A44V48A-0-D-CAN

| 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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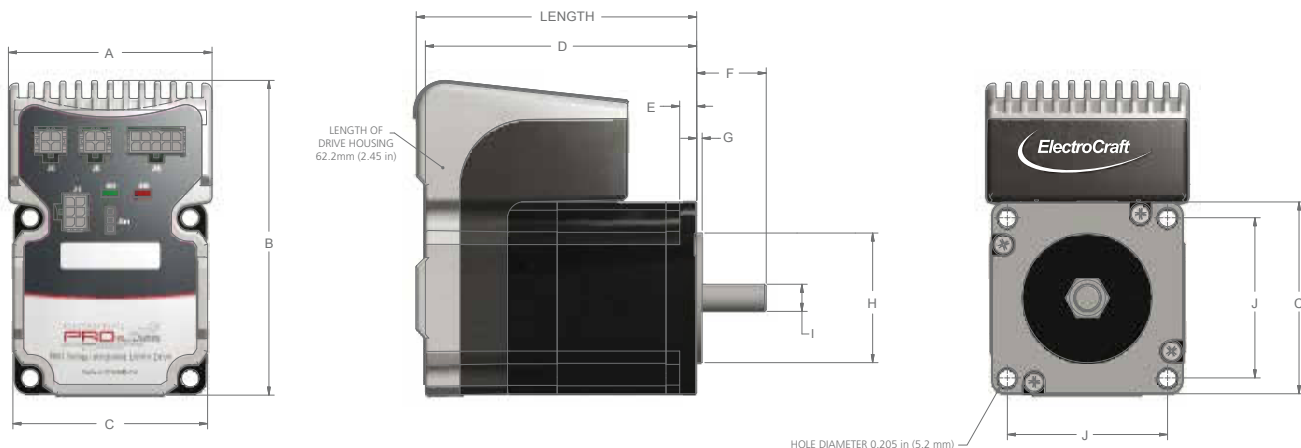
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Electrocraft PRO Series Integrated Motor Drive

PT56: Integrated Stepper motor drive



The PT56 combines the ElectroCraft TorquePower™ 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 torque 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).



| 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 |

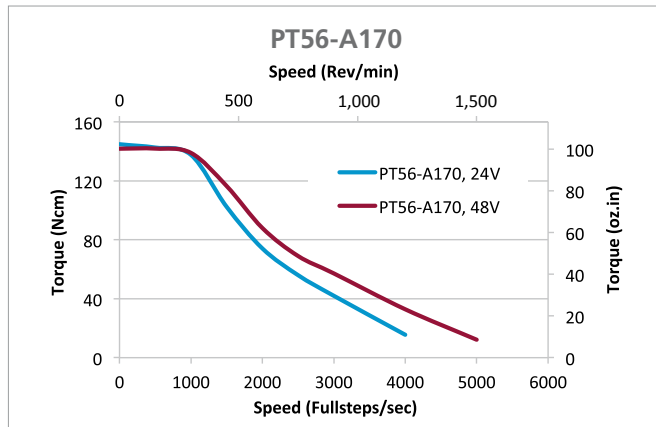
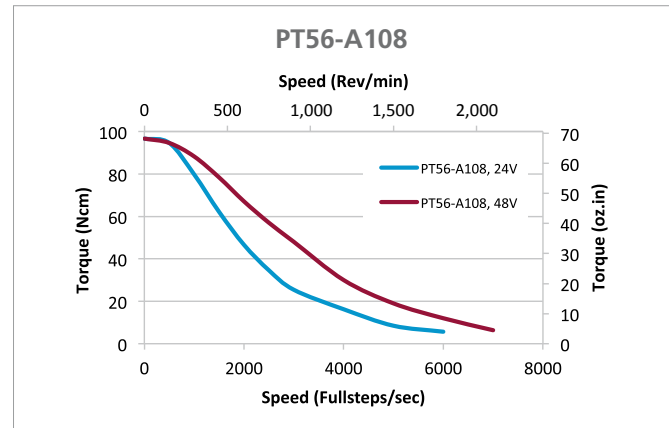
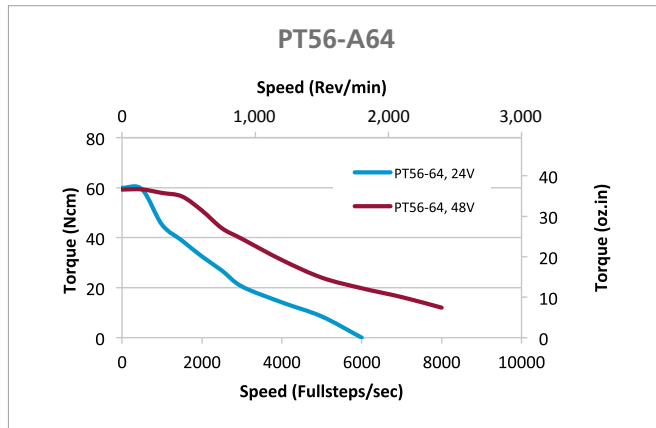
Parameter

| 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.cm ² (oz-in sec ²) | 0.141 (0.00198) | 0.248 (0.0035) | 0.430 (.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 | 0.8 |
| Step Angle °/step | 1.8 | | | Phase Inductance mH | 2.0 | 3.5 | 3.5 |
| *Weight Kg (oz) | 0.7 (24) | 0.9 (31) | 1.24 (44) | *Typical weight. May vary with options selected. | | | |

Rated operating temperature 40°C

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Torque/speed curves



Order part code for the PT42-A44V48A-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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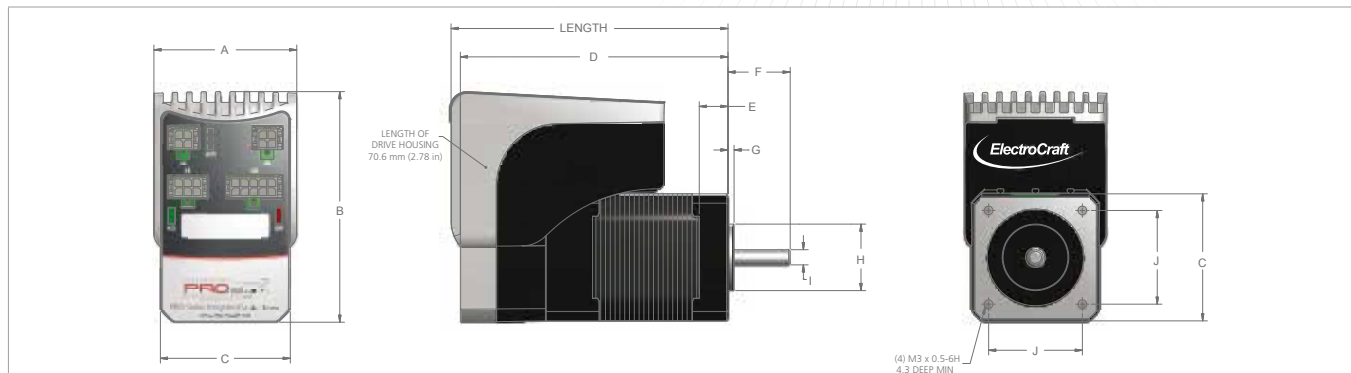
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Electrocraft PRO Series Integrated Motor Drive

PR42: Integrated Brushless DC motor drives



The ElectroCraft PR integrated brushless DC motor drives 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 86 Ncm (123 oz-in) and speeds of up to 10,450 RPM.



| Model | Units | Length | A | B | C | D | E | F | G | H | I | J |
|----------|-------|--------|-------|------|-------|--------|------|------------|------|--------------|-----------------|-------|
| 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 |
| | 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 |
| 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 |
| | 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 |
| 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 |
| | 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 |
| 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 |
| | 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 |

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.cm ² (oz-in sec ²) | 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 | | | | 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) | 15 (21) | 27.9 (39.5) | 64.8 (91) | 86.8 (122.9) | Torque Constant Ncm/A (oz-in/A) | 4.0 | 4.3 | 6.8 | 7.1 |
| *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 | 7.1 |

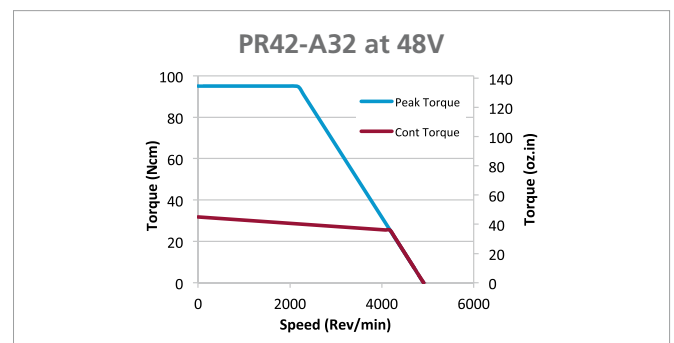
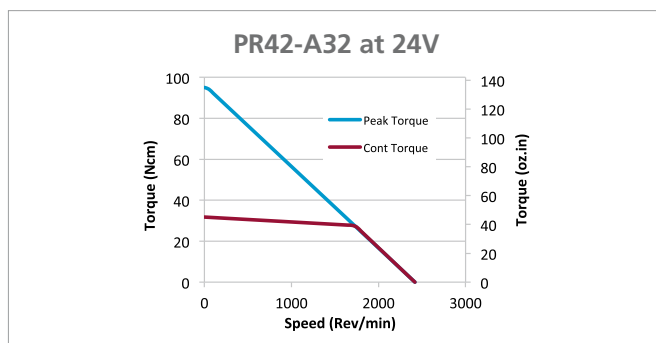
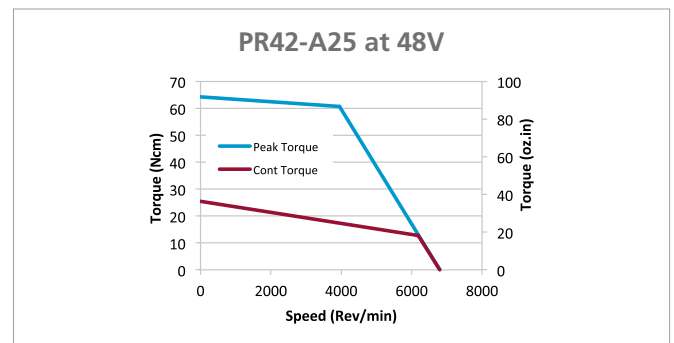
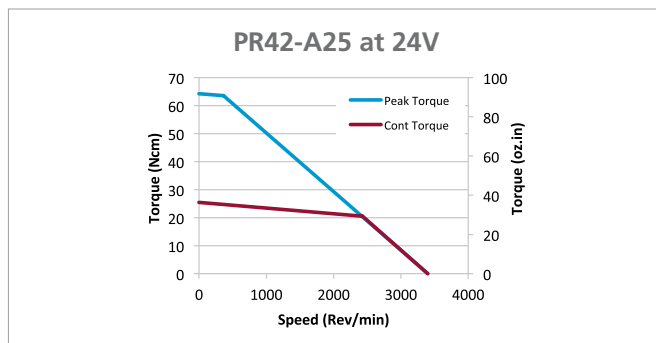
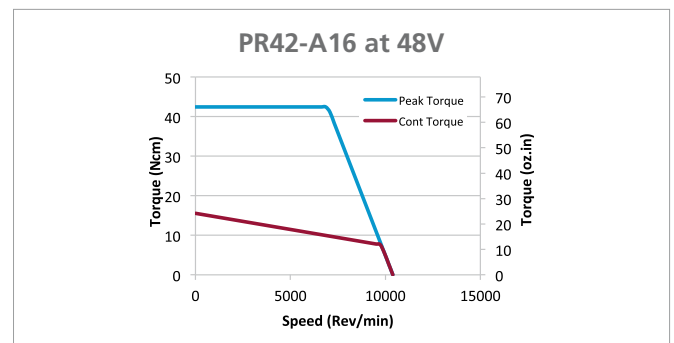
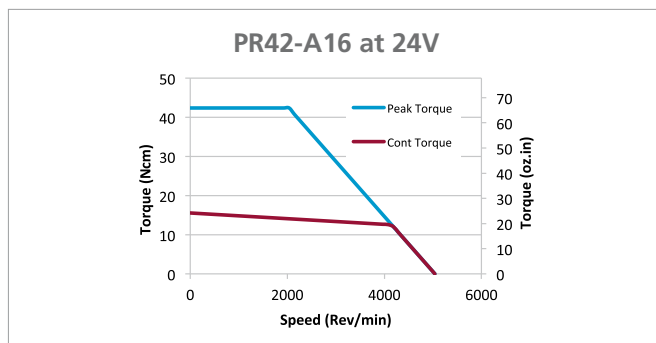
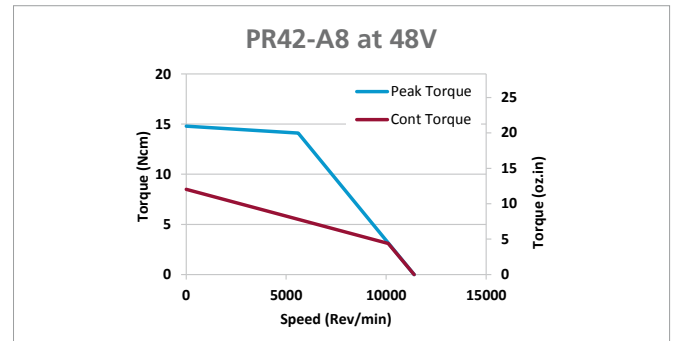
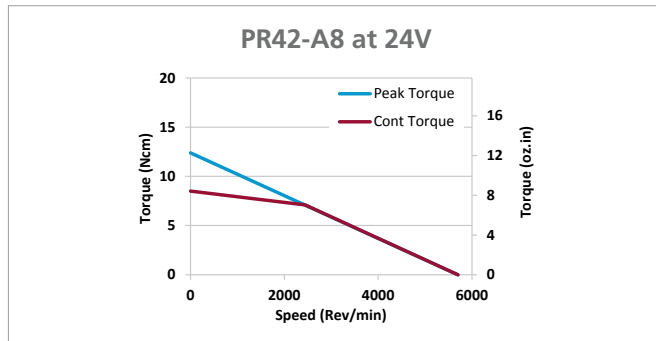
*Typical weight. May vary with options selected.

Rated operating temperature 40°C



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Torque/speed curves



Order part code for the PR42-A16V48A-0-D-CAN

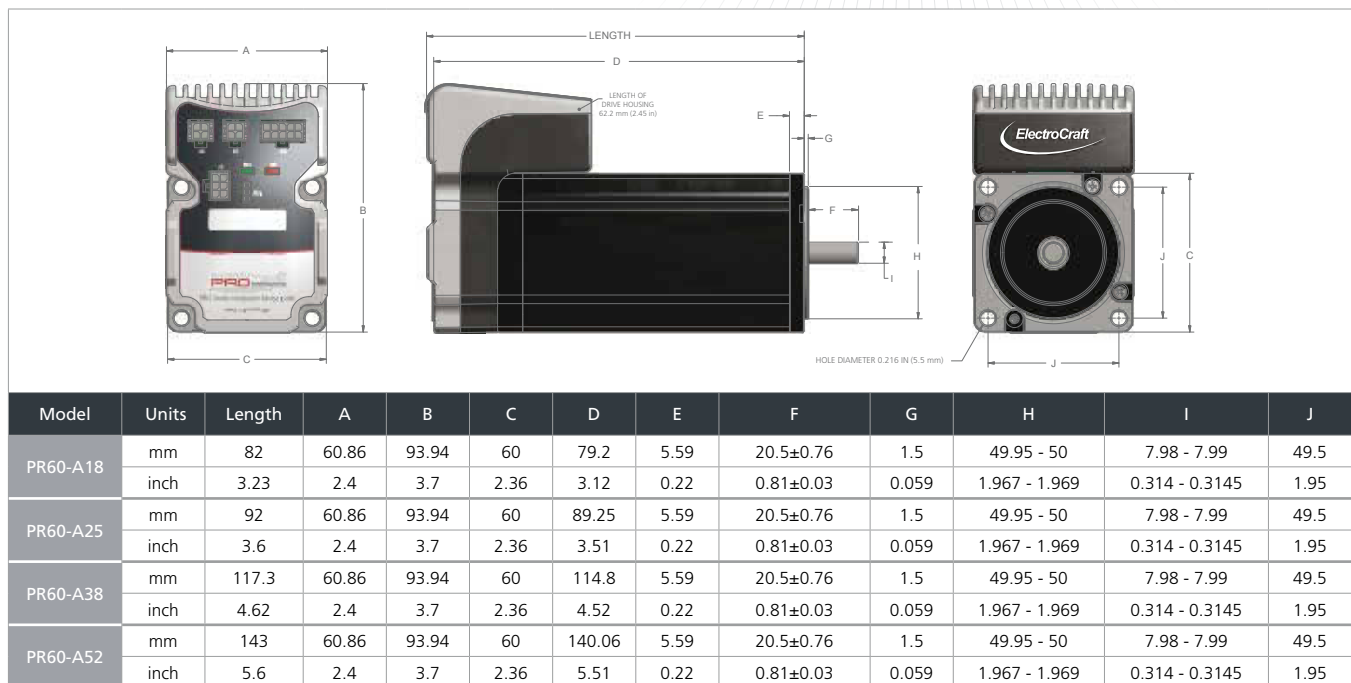
| | | | | | | | | | | | | |
|------------------|------------|---|------------|-------------------|---|---------|---------------|---|-------------|---|----------|---------|
| PR | 42 | - | A | 16 | V | 48 | A | - | 0 | - | D | CAN |
| Motor technology | Frame size | | Drive type | Continuous torque |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

Electrocraft PRO Series Integrated Motor Drive

PR60: Integrated Brushless DC motor drives



The ElectroCraft PR integrated motor drive is the highest-performance product in the range. Each combines a high-performance neodymium brushless motor with a fully-programmable controller to give maximum torque per frame size. These are the ideal solution for precision applications.



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 | | | | 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) | 106 (150) | 89 (126) | Torque Constant Ncm/A (oz-in/A) | 6.4 | 5.3 | 9.5 | 10.0 |
| *Motor weight Kg (oz) | 0.62 (22) | 0.88 (31) | 1.2 (42) | 1.5 (53) | Voltage Constant V/kRPM | 6.7 | 5.5 | 3.8 | 3.5 |

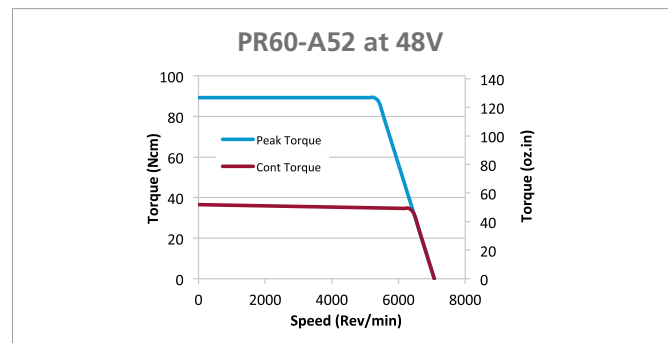
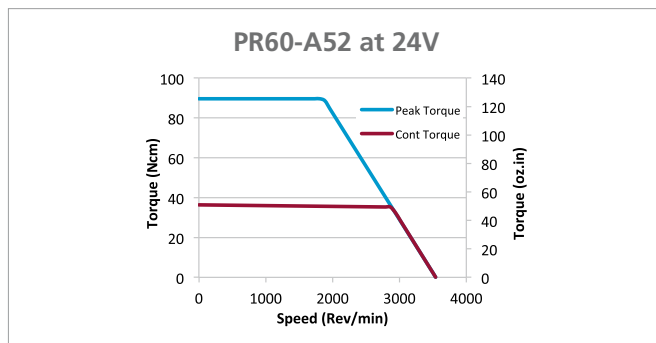
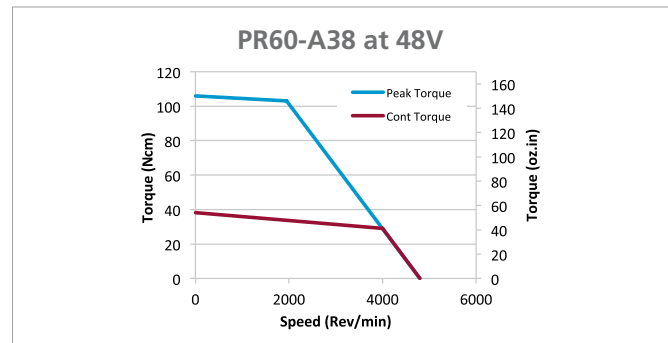
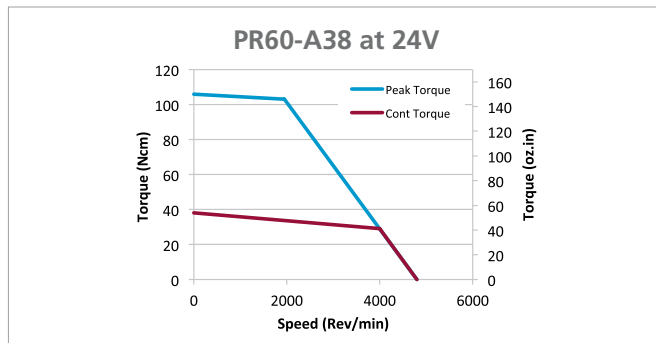
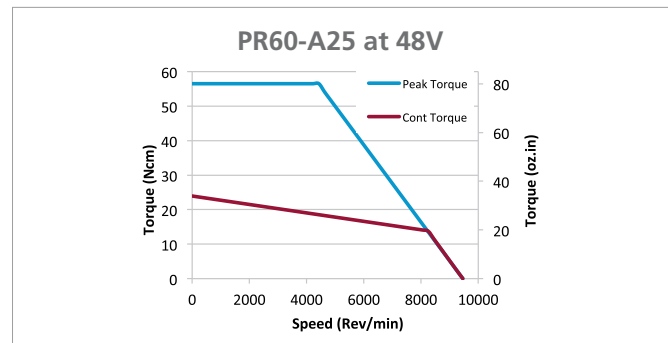
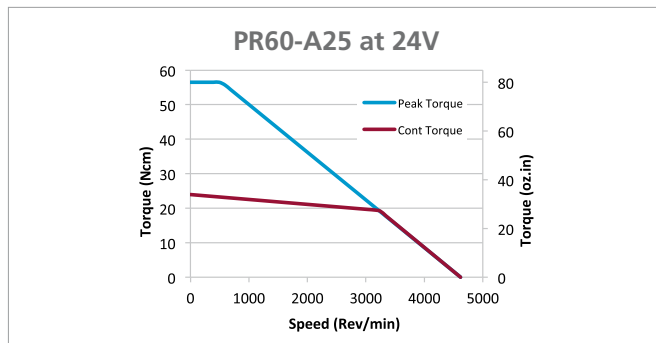
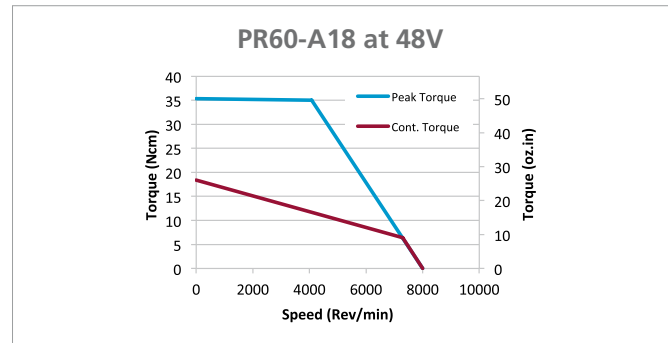
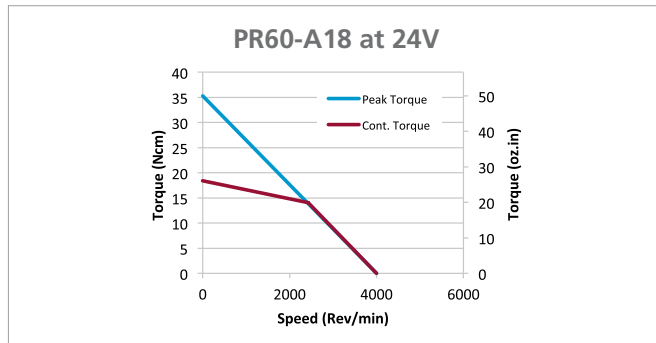
*Typical weight. May vary with options selected.

Rated operating temperature 40°C



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Torque/speed curves



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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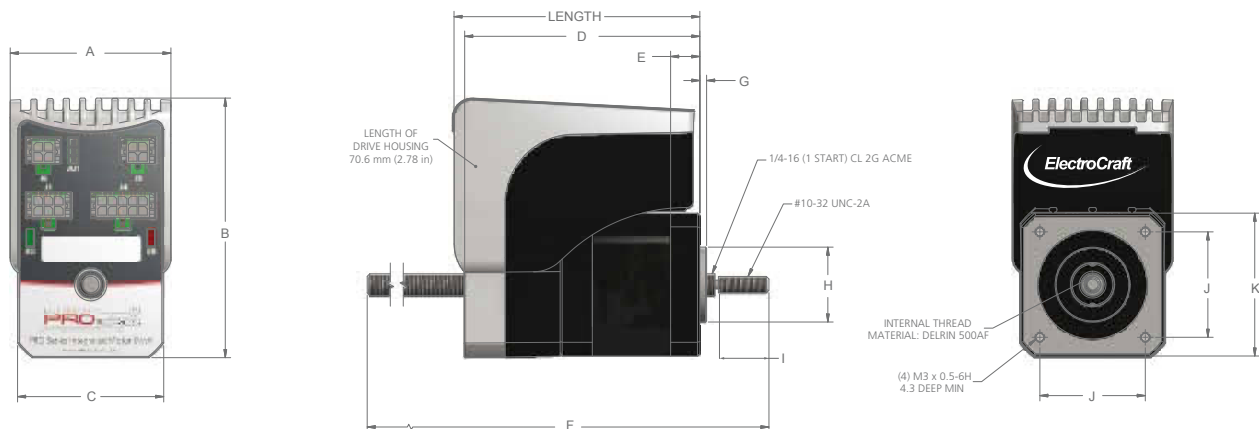
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Electrocraft PRO Series Integrated Motor Drive

PS42: Integrated Stepper actuators



The ElectroCraft integrated motor drive stepper linear actuator is a leap forward in actuator technology. This is linear motion in its most compact form, enabling users to reduce installation costs and machine footprint by installing simpler control and cabling architectures. The integrated PRO Series drive makes the PS42 highly configurable, incorporating the full range of sequence control, I/O and communications options. 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 with a 200 PPR stepper motor with even higher resolutions available in micro-stepping and closed-loop position control mode. Other thread options are available on request.



| 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 | 0.8648-0.866 | 0.5 | 1.22 | 1.65 |

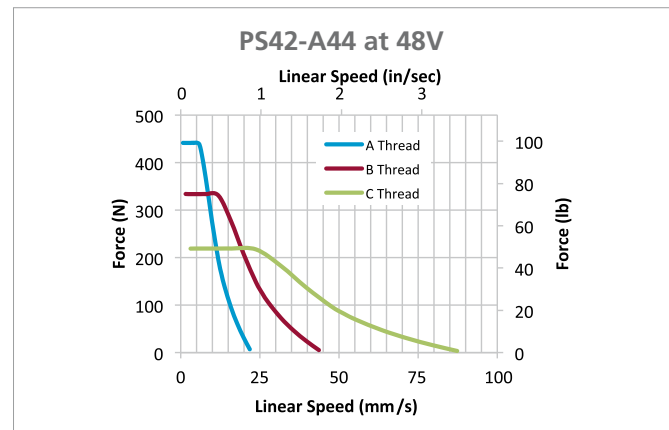
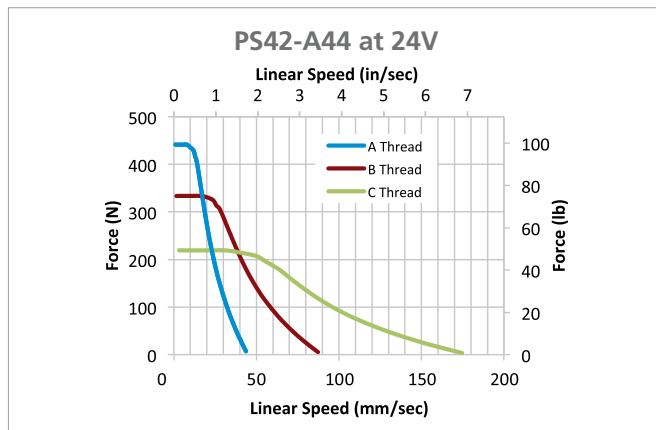
Parameter

| | | | |
|----------------------------|-------------|---|-----------------|
| 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.cm ² (oz-in sec ²) | 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 40°C | |



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Force/speed curves



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.

$$\text{Lead} = \text{Pitch} \times \text{number of starts.}$$

Thus a 1/4 – 16 (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 PPR (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 | |

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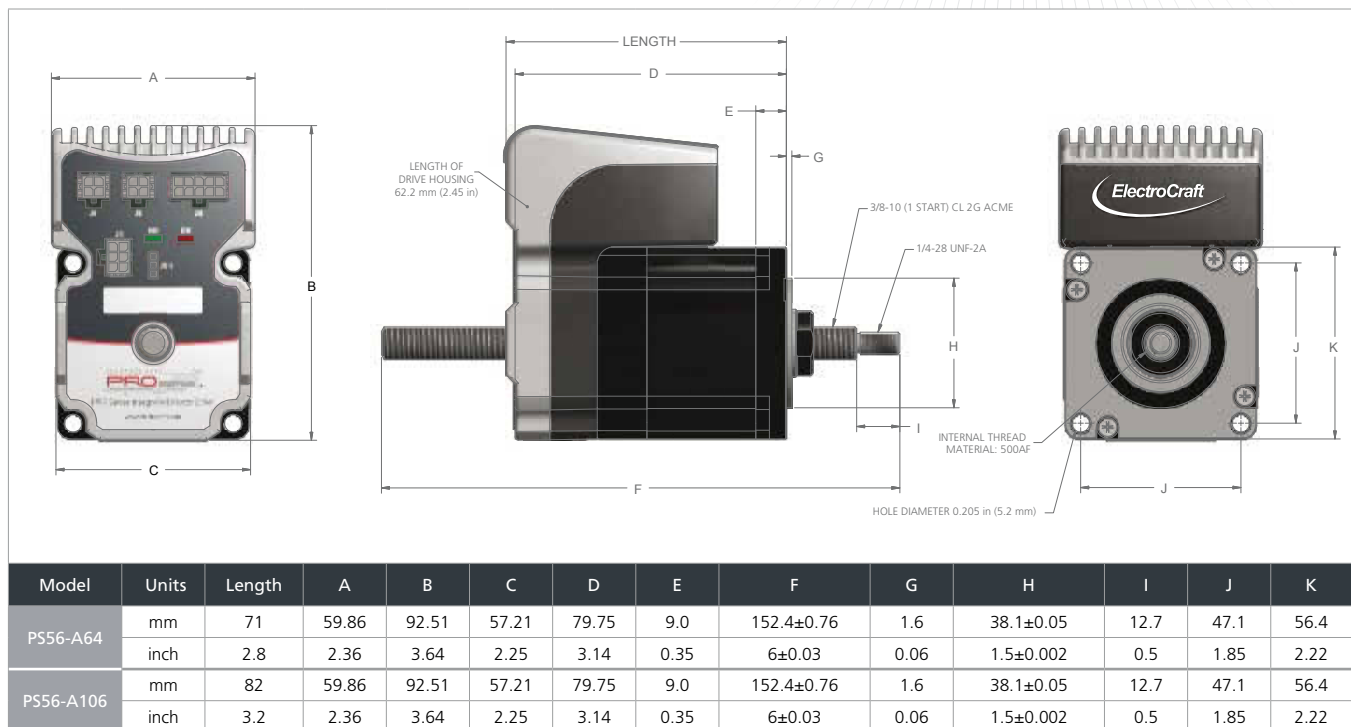
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Electrocraft PRO Series Integrated Motor Drive

PS56: Integrated Stepper actuators



The PS56 is the larger frame size variant of the ElectroCraft integrated stepper linear actuator. 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 there controlled high-power force is needed. 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 with a 200 PPR stepper motor with even higher resolutions available in micro-stepping and closed-loop position control mode. Other thread options are available on request.



Parameter

| | | | | | |
|----------------------------|-----------|------------|-----------------------------------|----------------|----------------------|
| Motor designation | PS56-A64 | PS56-A106 | Motor designation | PS56-A64 | PS56-A106 |
| Rated input voltage VDC | 12 – 48 | | No Load Speed @ 24V RPM | ? | 975 |
| Frame length mm (in) | 71 (2.8) | 82 (3.2) | No Load Speed @ 48V RPM | ? | 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 | Sold & Serviced By 8 |
| Weight* Kg (oz) | 0.69 (24) | 0.9 (31.4) | Phase Inductance mH | 2.0 | |

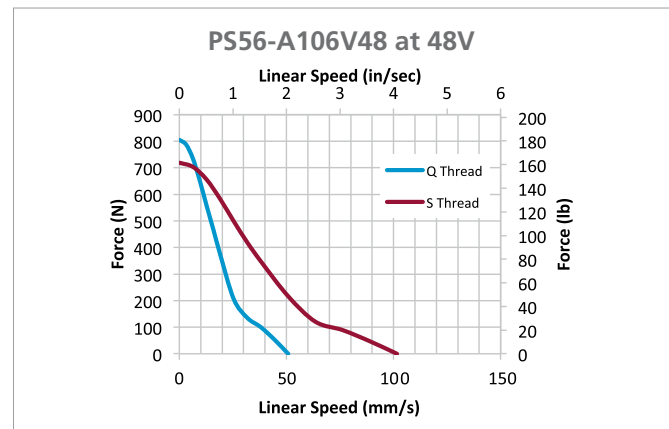
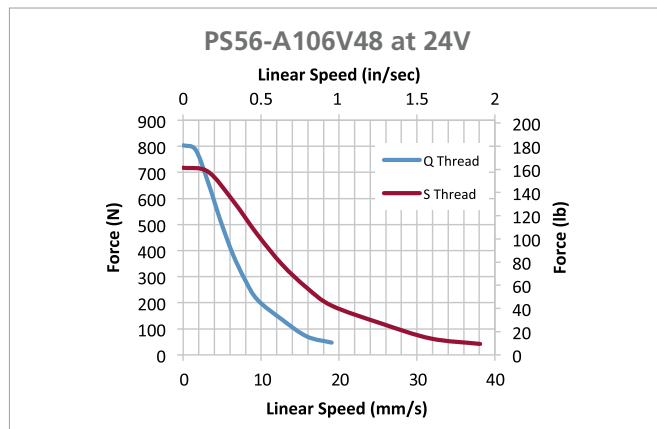
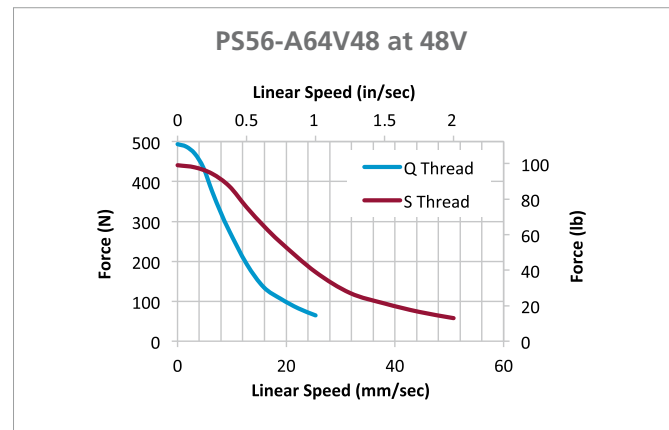
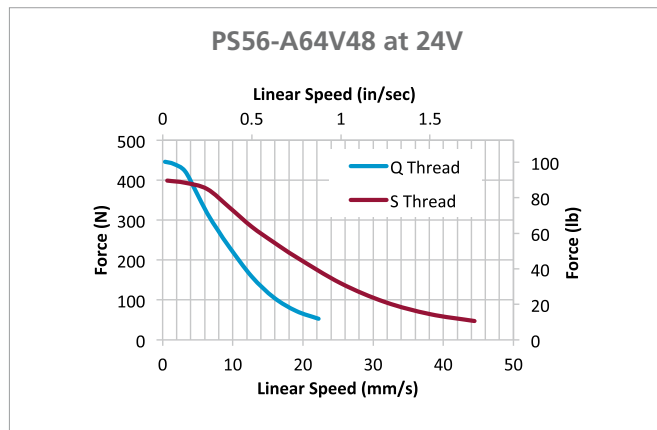
*Typical weight. May vary with options selected.

Rated operating temperature 40°C



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Force/speed curves



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.

$$\text{Lead} = \text{Pitch} \times \text{number of starts.}$$

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 PPR (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 |

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Product Range of ElectroCraft



ElectroCraft
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Drives

With meticulous engineering and advanced electronics, our CompletePower speed controls and servo drives offer reliability and precision servo motion control. From sensitive medical dosing systems to rugged professional power tools, our CompletePower devices can handle a wide variety of applications.



ElectroCraft
RapidPower™
BLDC

Our BLDC motors provide the rapid acceleration and consistent speed needed for applications from centrifuges to x-y positioning systems. The RapidPower product line ensures a steady operation at any speed by utilizing sealed ball bearings and reduced torque ripple from skewed magnetization.



ElectroCraft
PRO Series
Drives

The PRO Series Programmable Servo Drive provides a new design concept offering a cost effective, compact and modular solution for the control of rotary or linear stepper, brushless or PMDC brush motors of powers up to 385W, with up to 48V nominal voltage and 5.7A (RMS) continuous current.

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ElectroCraft
TorquePower™
Steppers

With non-cumulative position accuracies as low as $\pm 3\%$, the precision of our TorquePower motor is matched only by the dependability of its performance. Bi-directional operation and enclosed, permanently lubricated ball bearings provide long-lasting, smooth operation.



ElectroCraft
MobilePower™
Transmissions

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 hobbled to a precision AGMA 9-Class.



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.



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
DirectPower™
PMDc

Dynamically balanced armatures and precision ball bearings ensure that the DirectPower line maintains its characteristically smooth performance. This durable, totally enclosed, non-ventilated (TENV) motor is available in a broad product line from lower cost, general purpose options to high performance PMDC servo motors.



ElectroCraft
SurePower™
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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Electrocrafft PRO Series Integrated Motor Drive

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-0B4-X-CAN Open-loop Integrated Stepper Linear Actuator |
| 2000715 | PS42-A44V48A-0B4-D-CAN Open-loop Integrated Stepper Linear Actuator |
| 2000756 | PS56-A106V48A-0S87-X-CAN Open-loop Integrated Stepper Linear Actuator |
| 2000757 | PS56-A106V48A-0S87-D-CAN Closed-loop Integrated Stepper Linear Actuator |

Mating Cable

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

Miscellaneous Accessories



| PN | Description |
|---------|--|
| 2000685 | Complete Power Braking Module With External Bus Capacitance (13W, 4.7 Ohm) |

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