



Catalog DC05EN

Permanent Magnet DC

Motors

Drives



- DirectPower Series
- DirectPower Plus Series

- DA-Series
- SC-Series
- PRO Series



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.



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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Designed by stilbruch · www.stilbruch.me



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Typical applications for ElectroCraft PMDC Motors:

- Custom OEM applications
(Our Specialty)
- Antenna positioning
- Medical equipment
- Machine tool
- Material handling
- Agricultural equipment
- Pumps / compressors
- Door openers



Remote Camera Operator

Situation: A reputable global manufacturer of film and television camera equipment for both studio and field operation required a new cost effective motor for a next generation automatic camera development program. Considering the wide range of potential uses of the camera, the criteria required in selecting the motor for this application were extensive including wide dynamic performance, quiet, vibration-free operation, combined with high reliability throughout the wide environmental range.



And Roll'em ... The global capabilities of ElectroCraft engineering and manufacturing keep this camera tape rolling.

Solution: The ElectroCraft motor design team, using a foundation of PMDC motor products with a legacy of quality and reliability, fulfilled the application requirements with a high performance PMDC motor for both the pan and tilt camera head axis that met the low noise requirement for studio work while maintaining the reliability in for the more robust outdoor environmental use, all in the same design. Our regional value-add facility in Crewe, England further refined the product by adding encoders and other shaft modifications on certain models.

Result: In this case, the global teams at ElectroCraft combined their efforts to provide a motor solution that met the exact requirements of the application.

Electric Lift

Situation: A manufacturer of material handling equipment required two PMDC motors to drive the independent wheels of a new electric lift vehicle. The motors had to provide high power output, be efficient on battery power and were required to be closely matched in performance to maintain optimal steering control.

Solution: ElectroCraft designed a custom PMDC motor with high current carrying capability to meet the stringent temperature, environmental and performance requirements of the application. Each motor was individually tuned prior to shipment in order to match the performance required for optimal steering control. The motor was also designed to operate at peak efficiency during normal operation to achieve the longest possible battery life.

Results: This customer has shipped thousands of electric lift vehicles around the world, increasing their share in this new market space.



A highly reliable PMDC motor lifts this manufacturer into new markets.



ElectroCraft and a DirectPower PMDC motor keep this customer's production, and air, moving.

Blower Motor

Situation: A manufacturer of oil burners for use in residential and commercial furnaces, boilers and water heaters required a cost effective replacement for an existing motor application due to delivery and quality issues with their existing supply chain. Due to the potential ambient temperature of the application, the performance of the motor was critical as was the time in which the motor needed approval to keep shipments flowing.

Solution: Using an existing production design with proven performance and reliability history, ElectroCraft created a prototype with vented slots on each end cap for cooling that met the performance requirements in the initial sample. Within weeks the customer had enough motor product from ElectroCraft to meet their production and service requirements.

Results: The customer was able to utilize the ElectroCraft Engineering capability and legacy of proven performance to exceed the delivery and performance expectations of an anxious customer.



Select your

Permanent Magnet DC Products!



ElectroCraft DirectPower™ Series

Sizes: 2.0, 2.5, 3.0 inches (38, 52, 64, 77 mm)

Continuous Torque: up to 85 oz-in or 60 Ncm

- Features:
- Up to 36 VDC operation
 - 2-pole design
 - Internal brush card design
 - Sealed ball bearing construction for long life and quiet operation
 - Imperial and Metric configurations
 - Motor only configuration


ElectroCraft DirectPower™ Plus Series

Sizes: 2.25, 3.25, 4.0 Inches (57, 83, 101 mm)

Continuous Torque: up to 570 oz-in or 402 Ncm

- Features:
- Up to 90VDC operation
 - 2-pole and 4-pole designs (depending on frame size)
 - Removable brushes to extend product life
 - Dynamically balanced armatures to reduce vibration
 - Imperial and metric configurations
 - Tachometer and encoder configurations available (Depending on frame size)

PMDC Drive Product Matrix

|  | 4 Quadrant | | | | | | | | | | | | |
|---|-----------------------------|-----------|--------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------------|------------|------------|------------|
| | ElectroCraft CompletePower™ | | | | | | | | | ElectroCraft PRO Series | | | |
| | DA4303 | DA4709 | DA4718 | SCA-LE-30-03 | SCA-LS-30-03 | SCA-SE-30-06 | SCA-SS-30-06 | SCA-SS-70-10 | SCA-SS-70-30 | PRO-A04V36 | PRO-A08V48 | PRO-A10V80 | PRO-A20V80 |
| Product Description | | | | | | | | | | | | | |
| See on page | 23 | 25 | 25 | 27 | 27 | 29 | 29 | 31 | 31 | 35 | 37 | 39 | 41 |
| Power Features | | | | | | | | | | | | | |
| Min. Voltage (VDC) | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 |
| Max. Voltage (VDC) | 30 | 70 | 70 | 30 | 30 | 30 | 30 | 70 | 70 | 36 | 48 | 80 | 80 |
| Linear Output | ● | | | ● | ● | | | | | | | | |
| PWM Output | | ● | ● | | | ● | ● | ● | ● | | | | |
| Trap Waveform | | ● | ● | | | ● | ● | ● | ● | ● | ● | ● | ● |
| Output Freq (kHz) | | 50 or 100 | 50 | | | 50 | 50 | 49 | 49 | 20-100 | 20-100 | 20-100 | 20-100 |
| Power Ratings | | | | | | | | | | | | | |
| Peak Current | | 12.7 | 25.5 | | | | | 14.1 | 42.4 | 10 | 20 | 20 | 40 |
| Continuous Current | 3 | 9 | 18 | 2.1 | 2.1 | 4.2 | 4.2 | 7.1 | 21.2 | 4 | 8 | 10 | 20 |
| Continuous Power (W) | 75 | 630 | 1260 | 75 | 75 | 150 | 150 | 700 | 2100 | 144 | 400 | 800 | 1600 |
| Control Modes | | | | | | | | | | | | | |
| Torque Control | ● | ● | ● | | ● | | ● | ● | ● | ● | ● | ● | ● |
| I/R Compensation | ● | ● | ● | | ● | | ● | ● | ● | | | | |
| Speed Control using Tach | ● | ● | ● | | ● | | ● | ● | ● | | | | |
| Speed Control using Voltage | ● | ● | ● | | ● | | ● | ● | ● | | | | |
| Speed Control using Encoder | | | | ● | | ● | | ● | ● | ● | ● | ● | ● |
| Analog Command (VDC) | ±10 | ±10 | ±10 | ±10 | ±10 | ±10 | ±10 | ±10 | ±10 | 0-5 | 0-5 | 0-5 ±10 | 0-5 ±10 |
| Fully Programmable Instruction Set | | | | | | | | | | ● | ● | ● | ● |
| Communication / Compliance | | | | | | | | | | | | | |
| CE Compliance (LV Directive) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Physical Enclosure | | | | | | | | | | | | | |
| Totally Enclosed | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ |
| Case Type: Book Shelf | ● | ● | ● | | | | | | | ● | ● | ● | ● |
| Case Type: PCB Mount | | | | | | | | | | ● | ● | | |
| Case Type: Rack | | | | ● | ● | ● | ● | ● | ● | | | | |

○ Using this combination may limit Peak Torque.

DP20 : ElectroCraft DirectPower™ | PMDC Motor

| Size in (mm) | Peak Torque oz-in (Ncm) | Speeds up to RPM |
|--------------|-------------------------|------------------|
| 2.06 (52) | 72 (51) | 3400 |



Good-Performance. Great Price.

Our DirectPower DP20 is a conventional brush-type permanent magnet DC motor with ball bearings and non-replaceable brushes for smooth reliable operation. It provides torque up to 72 oz-in or 50.8 Ncm.

To build your own motor, choose the:

1 - Frame Size
(Imperial or Metric)

2 - Torque

3 - Winding

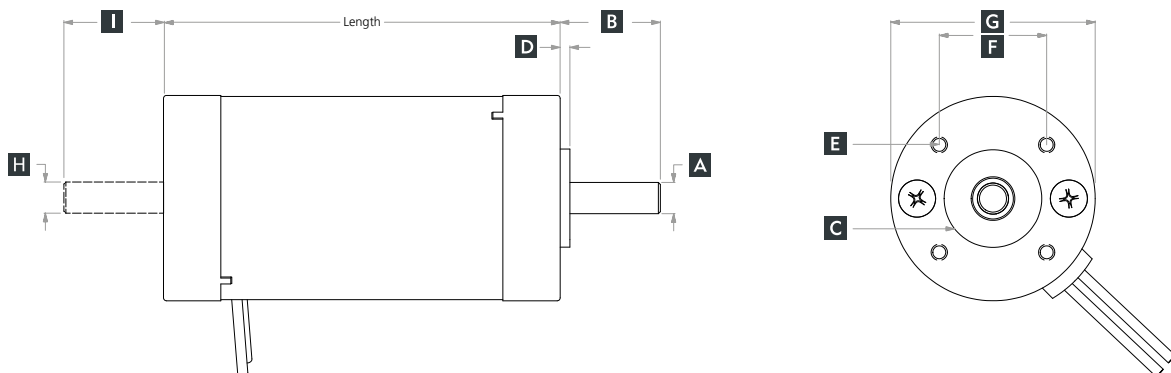
4 - Features
(see page 39)

a. **DP20** — **10** — **V** **12** — **000** — **X**
 Product Name Frame Size Continuous Torque (oz-in) Voltage Rear Shaft Front Shaft Lead Option Encoder

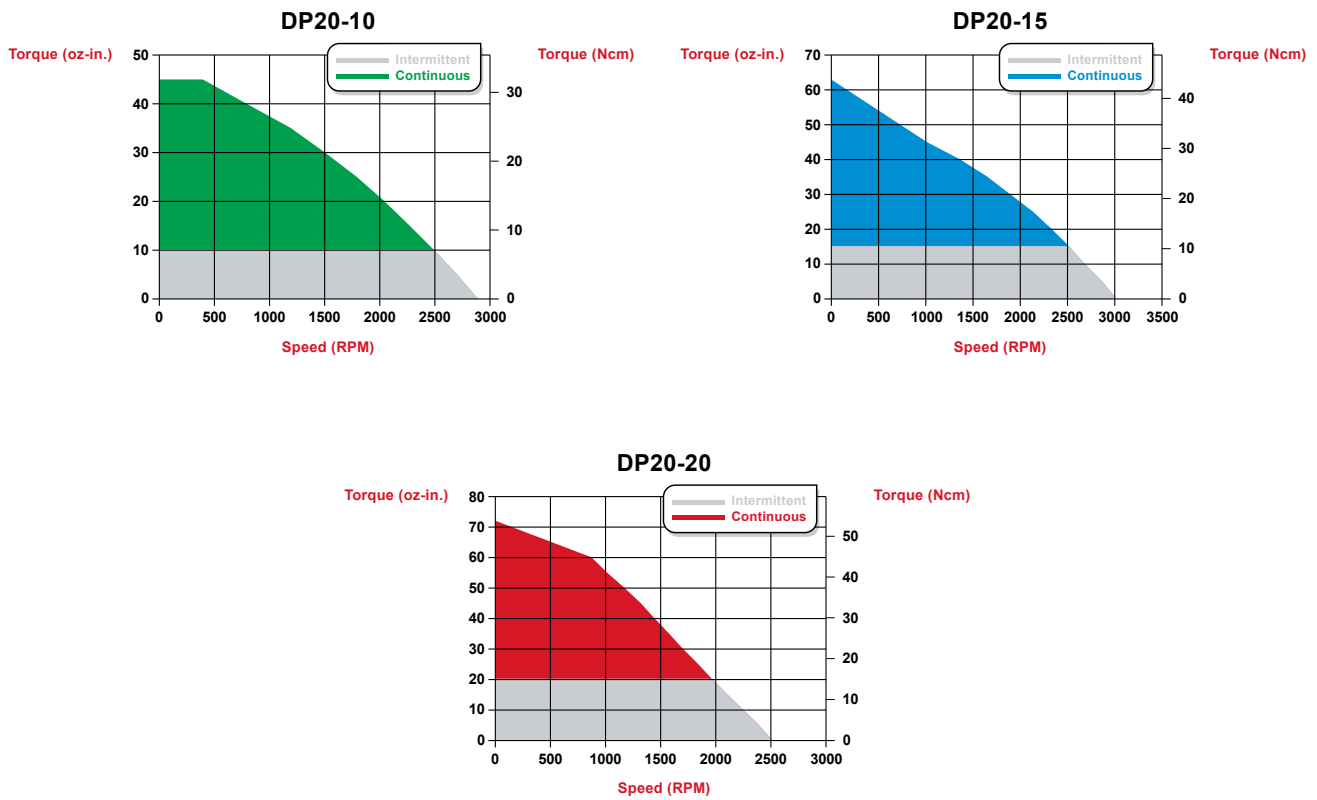
b. **DP20M** — **07** — **V** **12** — **000** — **X**
 Product Name Frame Size Optional Metric Continuous Torque (Ncm) Voltage Rear Shaft Front Shaft Lead Option Encoder

Step 1: DP20 & DP20M Frame Size Drawing Key

| Model | MAX Length | A | B | C | D | E | F | G | H | I | J |
|----------|------------|------------------------|--------------------|------------------|--------------------|---|--------------------------|---------------------------------|------------------------|-------------------|--|
| | | Front Shaft Diameter | Front Shaft Length | Pilot Diameter | Pilot Length (Ref) | Mounting Hole Pattern (Ref) | Mount Hole Spacing (Ref) | Flange External Dimension (Ref) | Rear Shaft Diameter | Rear Shaft Length | Encoder Length Single Ended Differential |
| DP20-10 | 4.010 in | 0.3124 in 0.3127 in | 1.00 in ±0.03 | 0.984 ±0.005 | 0.098 in | [4] 8-32 UNC-2B 0.254 DP on 1.531 in D.B.C. | 1.086 | 2.06 in | 0.3124 in 0.3127 in | 1.00 in ±0.03 | N/A |
| DP20-15 | 4.663 in | | | | | | | | | | |
| DP20-20 | 4.663 in | | | | | | | | | | |
| DP20M-07 | 101.8 mm | 8.000 mm 7.991 mm | 25.4 mm ±0.76 | 25.0 mm ±0.13 | 2.5 mm | [4] M4 x 6.35 DP on 38.89 mm D.B.C. | 27.5 | 52 mm | 8.000 mm 7.987 mm | 25.4 mm ±0.76 | N/A |
| DP20M-11 | 118.5 mm | | | | | | | | | | |
| DP20M-14 | 118.5 mm | | | | | | | | | | |



Step 2: DP20 Torque and Mechanical Data



| Stack Size Models | DP20-10 / DP20M-07 | DP20-15 / DP20M-11 | DP20-20 / DP20M-14 |
|----------------------------------|--------------------|--------------------|--------------------|
| Cont Stall Torque oz-in (Ncm) | 10 (7) | 15 (11) | 20 (14) |
| Peak Torque oz-in (Ncm) | 54 (38) | 63 (44) | 72 (51) |
| No Load Speed RPM | 3190 | 3375 | 2540 |
| Motor Weight oz (kg) | 32 (0.90) | 35.2 (0.99) | 36.8 (1.0) |
| Poles | 2 | 2 | 2 |

Step 3: Available Windings

| | 10V12 | 10V24 | 15V12 | 15V24 | 20V12 | 20V24 |
|------------------------------------|-----------|------------|-----------|-----------|-----------|------------|
| Imperial | 10V12 | 10V24 | 15V12 | 15V24 | 20V12 | 20V24 |
| Metric | 07V12 | 07V24 | 11V12 | 11V24 | 14V12 | 14V24 |
| Voltage (Vdc) | 12 | 24 | 12 | 24 | 12 | 24 |
| Voltage Constant V/kRPM | 3.7 | 7.4 | 4.0 | 7.0 | 4.7 | 9.3 |
| Torque Constant oz-in/A (Ncm/A) | 5.0 (3.5) | 10.0 (7.0) | 4.7 (3.3) | 9.5 (6.7) | 6.3 (4.4) | 13.0 (9.1) |
| Max Cont Current (A) | 3.80 | 1.85 | 4.00 | 1.95 | 4.25 | 2.10 |
| Peak Current (A) | 11.5 | 5.7 | 13.5 | 6.7 | 11.5 | 5.7 |

DP25 : ElectroCraft DirectPower™ | PMDC Motor

| Size in (mm) | Peak Torque oz-in (Ncm) | Speeds up to RPM |
|--------------|-------------------------|------------------|
| 2.51 (64) | 215 (152) | 4100 |



Better-Performance. Great Price.

Our DirectPower DP25 is a conventional brush-type permanent magnet DC motor with ball bearings and non-replaceable brushes for smooth reliable operation. It provides torque up to 215 oz-in or 151.8 Ncm.

To build your own motor, choose the:

1 - Frame Size
(Imperial or Metric)

2 - Torque

3 - Winding

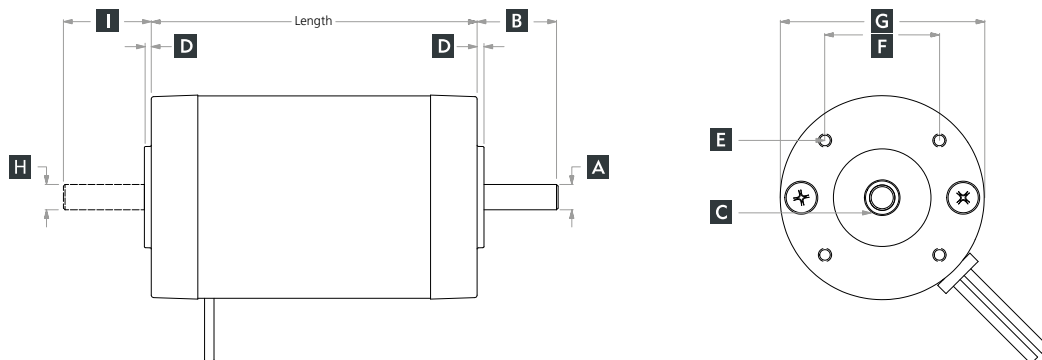
4 - Features
(see page 39)

a. **DP25** (Product Name) **25** (Frame Size) **30** (Continuous Torque oz-in) **V12** (Voltage) **000** (Rear Shaft, Front Shaft, Lead Option) **X** (Encoder)

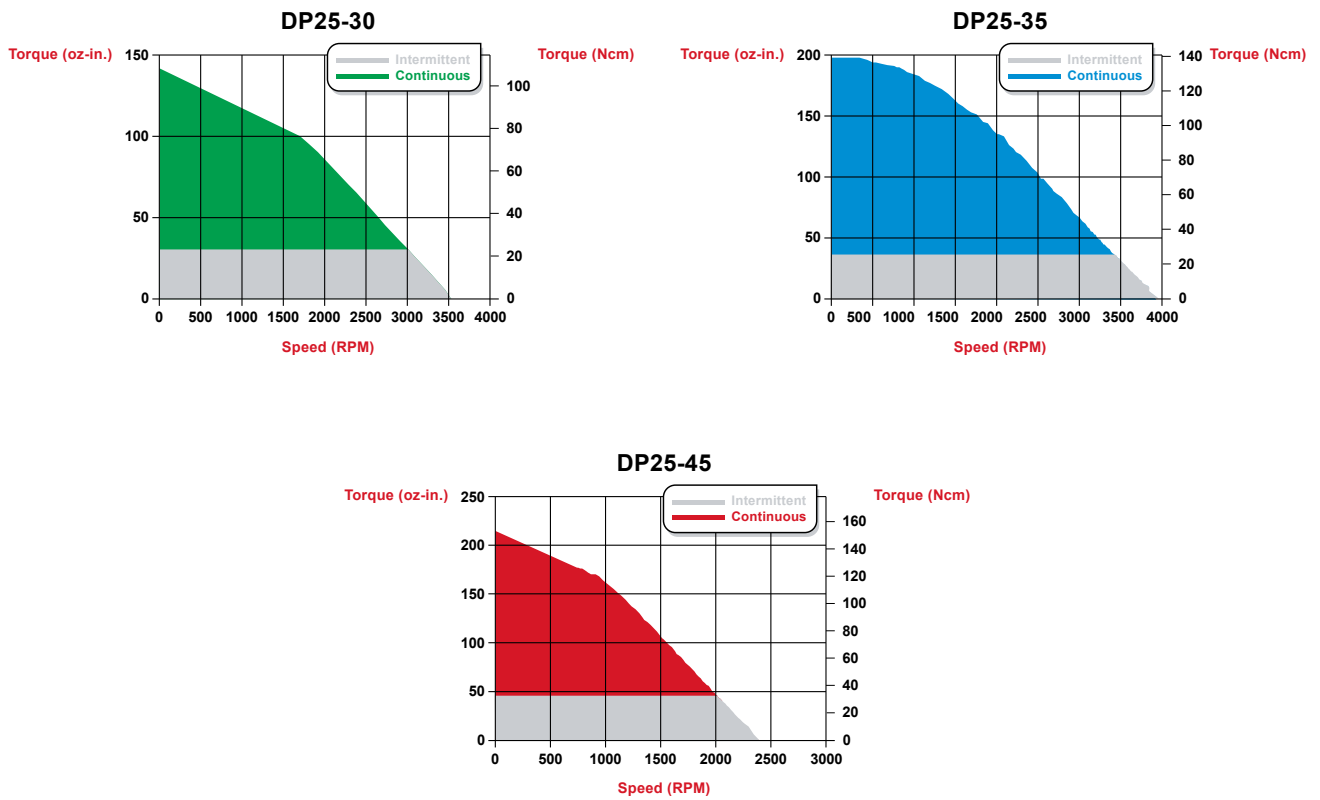
b. **DP25M** (Product Name) **25** (Frame Size) **M** (Optional Metric) **21** (Continuous Torque Ncm) **V12** (Voltage) **000** (Rear Shaft, Front Shaft, Lead Option) **X** (Encoder)

Step 1: DP25 & DP25M Frame Size Drawing Key

| Model | MAX Length | A | B | C | D | E | F | G | H | I | J |
|----------|------------|------------------------|--------------------|-------------------|--------------------|---|--------------------------|---------------------------------|------------------------|-------------------|--|
| | | Front Shaft Diameter | Front Shaft Length | Pilot Diameter | Pilot Length (Ref) | Mounting Hole Pattern (Ref) | Mount Hole Spacing (Ref) | Flange External Dimension (Ref) | Rear Shaft Diameter | Rear Shaft Length | Encoder Length Single Ended Differential |
| DP25-30 | 4.055 in | 0.3124 in 0.3127 in | 1.00 in ±0.04 | 1.250 ±0.005 | 0.085 in | [4] 8-32 UNC-2B x 0.25 DP on 2.00 in D.B.C. | 1.414 in | 2.52 in | 0.3124 in 0.3127 in | 1.00 in ±0.04 | N/A |
| DP25-35 | 4.553 in | | | | | | | | | | |
| DP25-45 | 5.056 in | | | | | | | | | | |
| DP25M-21 | 103.00 mm | 8.000 mm 7.991 mm | 25.4 mm ±1.0 | 31.75 mm ±0.13 | 2.16 mm | [4] M5 x 6.35 DP on 50.80 mm D.B.C. | 35.91 mm | 64 mm | 8.000 mm 7.987 mm | 25.4 mm ±1.02 | N/A |
| DP25M-25 | 115.64 mm | | | | | | | | | | |
| DP25M-32 | 128.42 mm | | | | | | | | | | |



Step 2: DP25 Torque and Mechanical Data



| Stack Size Models | DP25-30 / DP25M-21 | DP25-35 / DP25M-25 | DP25-45 / DP25M-32 |
|----------------------------------|--------------------|--------------------|--------------------|
| Cont Stall Torque oz-in (Ncm) | 30 (21) | 35 (25) | 45 (32) |
| Peak Torque oz-in (Ncm) | 142 (100) | 180 (127) | 215 (152) |
| No Load Speed RPM | 4065 | 3500 | 2470 |
| Motor Weight oz (kg) | 41.6 (1.18) | 52.8 (1.49) | 62.4 (1.76) |
| Poles | 2 | 2 | 2 |

Step 3: Available Windings

| | 30V12 | 30V24 | 35V12 | 35V24 | 45V12 | 45V24 |
|------------------------------------|-----------|-----------|-----------|-----------|-----------|-------------|
| Imperial | 30V12 | 30V24 | 35V12 | 35V24 | 45V12 | 45V24 |
| Metric | 21V12 | 21V24 | 25V12 | 25V24 | 32V12 | 32V24 |
| Voltage (Vdc) | 12 | 24 | 12 | 24 | 12 | 24 |
| Voltage Constant V/kRPM | 3.28 | 6.56 | 3.50 | 6.96 | 4.90 | 9.70 |
| Torque Constant oz-in/A (Ncm/A) | 4.4 (3.1) | 8.9 (6.2) | 4.7 (3.3) | 9.4 (6.6) | 6.6 (4.6) | 13.20 (9.3) |
| Max Cont Current (A) | 9.2 | 4.6 | 9.5 | 4.8 | 8.0 | 4.0 |
| Peak Current (A) | 32.0 | 16.0 | 40.0 | 20.0 | 30.0 | 16.0 |

DP30 : ElectroCraft DirectPower™ | PMDC Motor

| Size in (mm) | Peak Torque oz-in (Ncm) | Speeds up to RPM |
|--------------|-------------------------|------------------|
| 3.03 (77) | 230 (162) | 1800 |



Better Performance. Great Price.

Our DirectPower DP30 is a conventional brush-type permanent magnet DC motor with ball bearings and non-replaceable brushes for smooth reliable operation. It provides torque up to 230 oz-in or 162.4 Ncm.

To build your own motor, choose the:

1 - Frame Size
(Imperial or Metric)

2 - Torque

3 - Winding

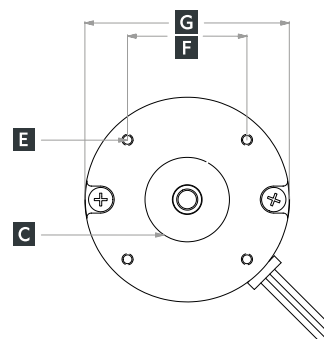
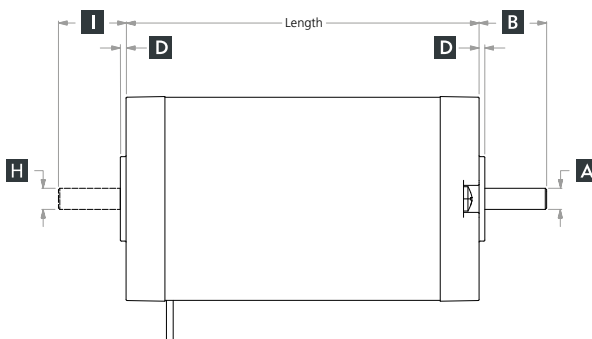
4 - Features
(see page 39)

a. **DP30** — **60** — **V 12** — **000** — **X**

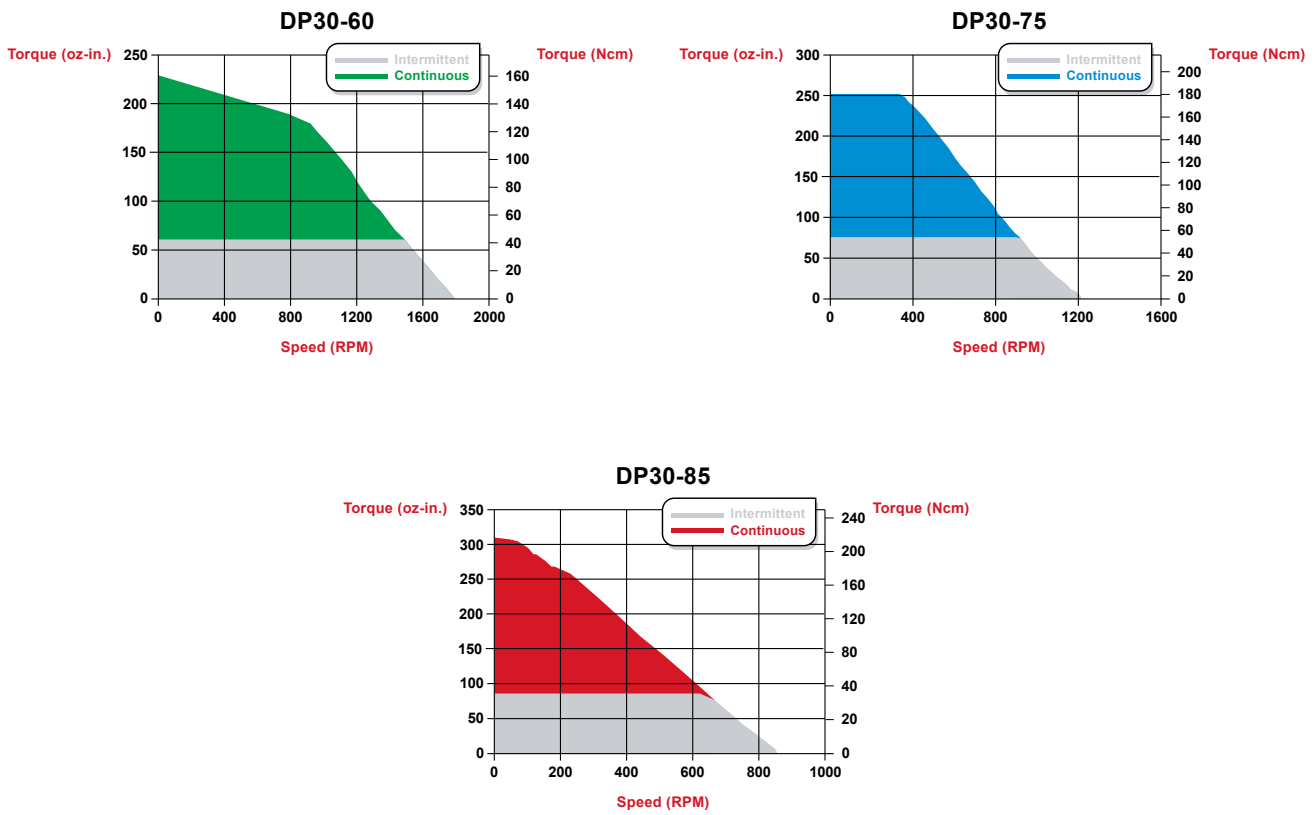
Product Name Frame Size Continuous Torque (oz-in) Voltage Rear Shaft Front Shaft Lead Option Encoder

Step 1: DP30 & DP30M Frame Size Drawing Key

| Model | MAX Length | A | B | C | D | E | F | G | H | I | J |
|---------|------------|------------------------|--------------------|-----------------|--------------------|---|--------------------------|---------------------------------|------------------------|-------------------|--|
| | | Front Shaft Diameter | Front Shaft Length | Pilot Diameter | Pilot Length (Ref) | Mounting Hole Pattern (Ref) | Mount Hole Spacing (Ref) | Flange External Dimension (Ref) | Rear Shaft Diameter | Rear Shaft Length | Encoder Length Single Ended Differential |
| DP30-60 | 5.265 in | | | | | | | | | | |
| DP30-75 | 5.986 in | 0.3124 in 0.3127 in | 1.00 in ±0.04 | 1.250 ±0.005 | 0.085 in | [4] 8-32 UNC-2B x 0.25 DP on 2.50 in D.B.C. | 1.768 in | 3.03 in | 0.3124 in 0.3127 in | 1.00 in ±0.04 | N/A |
| DP30-85 | 5.986 in | | | | | | | | | | |



Step 2: DP30 Torque and Mechanical Data



| Stack Size Models | DP30-60 | DP30-75 | DP30-85 |
|----------------------------------|------------|------------|-----------|
| Cont Stall Torque oz-in (Ncm) | 60 (42) | 75 (53) | 85 (60) |
| Peak Torque oz-in (Ncm) | 230 (162) | 180 (127) | 215 (152) |
| No Load Speed RPM | 1800 | 1280 | 860 |
| Motor Weight oz (kg) | 73.6 (2.0) | 92.8 (2.6) | 96 (2.7) |
| Poles | 2 | 2 | 2 |

Step 3: Available Windings

| Imperial | 60V12 | 60V24 | 75V12 | 75V24 | 85V12 | 85V24 |
|------------------------------------|------------|--------------|-------------|--------------|--------------|--------------|
| Voltage (Vdc) | 12 | 24 | 12 | 24 | 12 | 24 |
| Voltage Constant V/kRPM | 6.50 | 13.10 | 9.00 | 18.00 | 13.60 | 27.10 |
| Torque Constant oz-in/A (Ncm/A) | 8.90 (6.3) | 17.70 (12.5) | 12.20 (8.6) | 24.30 (17.2) | 18.40 (13.0) | 36.60 (25.8) |
| Max Cont Current (A) | 8.7 | 4.4 | 6.6 | 3.3 | 5.0 | 2.5 |
| Peak Current (A) | 27.0 | 13.8 | 13.5 | 6.7 | 15.0 | 6.0 |

DPP240 : ElectroCraft DirectPower™ Plus | PMDC Motor

| Size in (mm) | Peak Torque oz-in (Ncm) | Speeds up to RPM |
|--------------|-------------------------|------------------|
| 2.25 (57) | 400 (283) | 6000 |



High-Torque. Long life.

Our DirectPower Plus 240 series offers reliable performance in a small package for your low voltage, lower torque range applications. This series utilizes mechanically aligned electromagnetics to provide consistent speed in either rotation. This motor includes dynamically balanced armatures, sealed ball bearings, and replaceable brushes. A low ripple tachometer option is available for speed regulation.

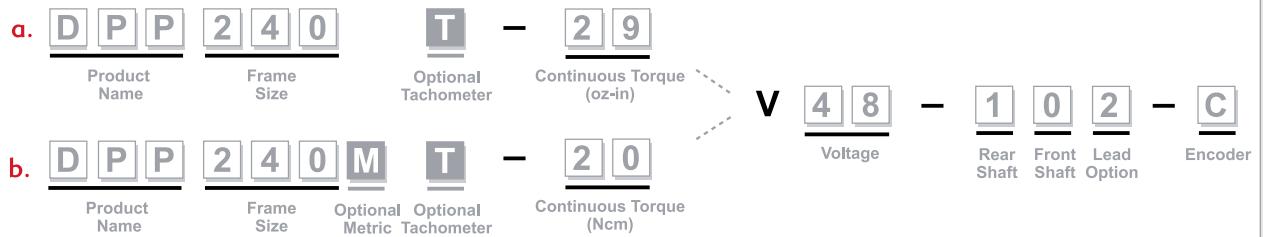
To build your own motor, choose the:

1 - Frame Size
(Imperial or Metric)

2 - Torque

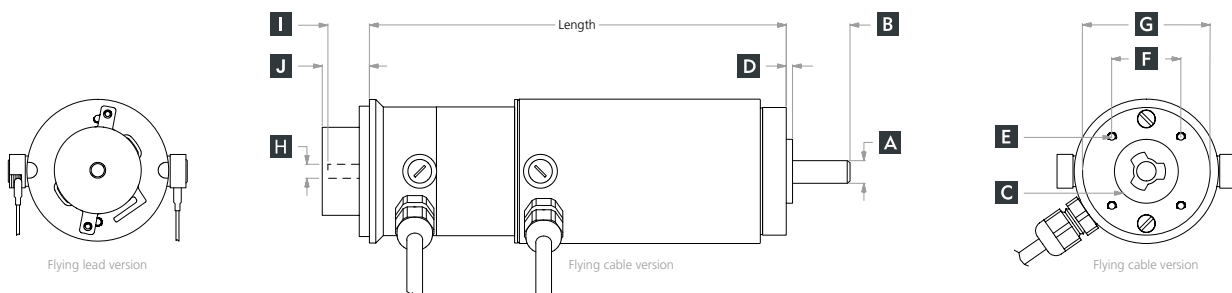
3 - Winding

4 - Features
(see page 39)



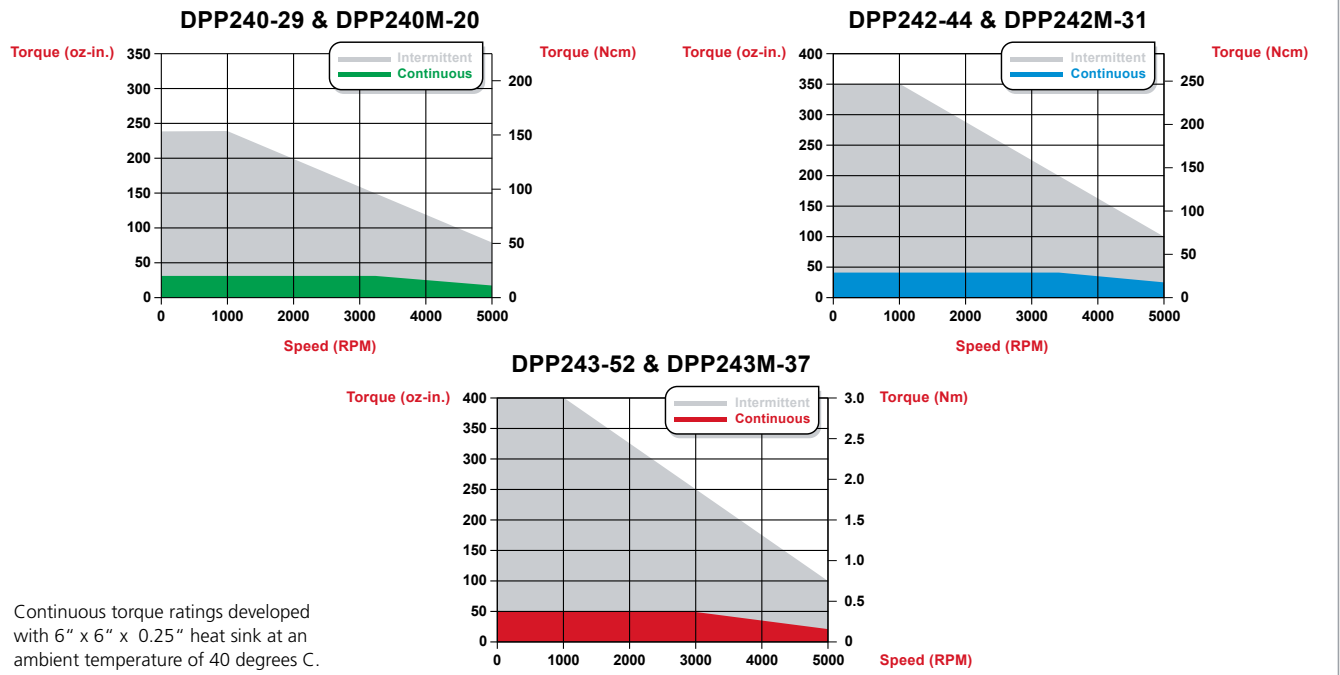
Step 1: DPP240 & DPP240M Frame Size Drawing Key

| Model | MAX Length | MAX Length (with tachometer) | A Front Shaft Diameter | B Front Shaft Length | C Pilot Diameter | D Pilot Length (Ref) | E Mounting Hole Pattern (Ref) | F Mount Hole Spacing (Ref) | G Flange External Dimension (Ref) | H Rear Shaft Diameter | I Rear Shaft Length | J Encoder Length (Ref) |
|---------|------------|------------------------------|---------------------------|-------------------------|----------------------|-------------------------|--|-------------------------------|--------------------------------------|------------------------------------|------------------------|---------------------------|
| DPP240 | 4.0 in | 6.1 in | 0.2500 in 0.2495 in | 1.00 in ±0.03 | 1.000 in 0.998 in | 0.10 in | [4] 6-32 UNC-2B 0.38 in Deep Min EQ SP on 1.531 in D.B.C. | 1.083 in | 2.00 in | 0.2497 in 0.2494 in | 0.70 in ±0.030 | 0.74 in |
| DPP242 | 5.0 in | 7.1 in | | | | | | | | | | |
| DPP243 | 5.5 in | 7.6 in | 0.3750 in 0.3747 in | | | | | | | | | |
| DPP240M | 102 mm | 155 mm | 6.00 mm 5.99 mm | 25 mm ±0.762 | 24.99 mm 24.94 mm | 2.54 mm | [4] M4 x 0.7-6H 10 mm Deep Min EQ SP on 38.89 mm D.B.C. | 27.5 mm | 50.8 mm | 8.00 mm 7.99 mm (motor only) | 19 mm ±0.381 | 18.8 mm |
| DPP242M | 127 mm | 179 mm | | | | | | | | | | |
| DPP243M | 140 mm | 192 mm | 8.00 mm 7.99 mm | | | | | | | | | |



Other mounting options available upon request.

Step 2: DPP240 Torque and Mechanical Data



| Stack Size Models | DPP240-29 / DPP240M-20 | DPP242-44 / DPP242M-31 | DPP243-52 / DPP243M-36 |
|--|------------------------|------------------------|------------------------|
| Cont Stall Torque oz-in (Ncm) | 29 (20) | 44 (31) | 52 (36) |
| Peak Torque oz-in (Ncm) | 240 (170) | 350 (247) | 400 (283) |
| No Load Speed RPM | 5000 | 5000 | 5000 |
| Inertia oz-in-sec ² (g-cm ²) | 0.004 (282.5) | 0.006 (423.7) | 0.007 (494.3) |
| Motor Weight lb (kg) | 2.1 (0.95) | 3.0 (1.36) | 3.5 (1.59) |
| Motor/Tach Weight lb (kg) | 3.1 (1.41) | 3.9 (1.77) | 4.4 (2.00) |

Step 3: Available Windings

| | 29V48 | 29V60 | 44V48 | 44V60 | 52V48 | 52V60 |
|------------------------------------|-------------|-------------|------------|-------------|------------|-------------|
| Imperial | 29V48 | 29V60 | 44V48 | 44V60 | 52V48 | 52V60 |
| Metric | 20V48 | 20V60 | 31V48 | 31V60 | 36V48 | 36V60 |
| Voltage (Vdc) | 48 | 60 | 48 | 60 | 48 | 60 |
| Voltage Constant V/kRPM | 10.9 | 14.2 | 9.8 | 12.4 | 9.7 | 12.3 |
| Torque Constant oz-in/A (Ncm/A) | 14.7 (10.4) | 19.2 (13.6) | 13.3 (9.4) | 16.7 (11.8) | 13.1 (9.3) | 16.6 (11.7) |
| Max Cont Current (A) | 2.4 | 1.9 | 3.7 | 3.0 | 4.5 | 3.5 |
| Peak Current (A) | 16.3 | 13.9 | 26.7 | 21.2 | 31.9 | 25.3 |

Optional: Tachometer Specifications

| Model | Voltage Constant V/kRPM | Tach Resistance (Ohms) | Tach Ripple Peak-Peak @ 1000 RPM | Increase Motor Inertia oz-in-sec ² (g-cm ²) |
|---------------|----------------------------|---------------------------|-------------------------------------|---|
| DPP240 Series | 14.0 | 600-800 | 5% | 0.0014 (98.86) |

DPP

DPP640 : ElectroCraft DirectPower™ Plus | PMDC Motor

| Size in (mm) | Peak Torque oz-in (Ncm) | Speeds up to RPM |
|--------------|-------------------------|------------------|
| 3.25 (83) | 960 (678) | 4500 |



High-Torque. Long life.

Our DirectPower Plus 640 Series features a rugged, heavy-gauge steel housing construction for long-life and durability. This series offers smooth performance for your mid to low voltage, mid-level torque applications and features four pole construction, reduced torque ripple and optional sealed design for more aggressive application environments. A low ripple tachometer option is available for speed regulation.

To build your own motor, choose the:

1 - Frame Size (Imperial or Metric)

2 - Torque

3 - Winding

4 - Features (see page 39)

a. **D P P** **6 4 2** **T** - **1 0 0** **V** **6 0** - **1 2 2** - **C**

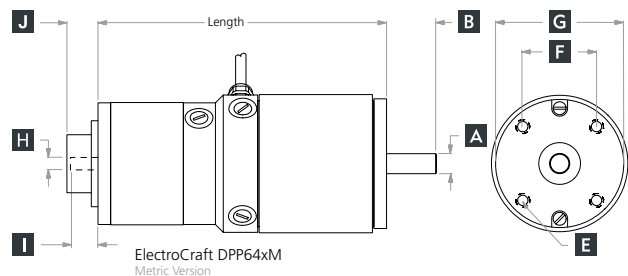
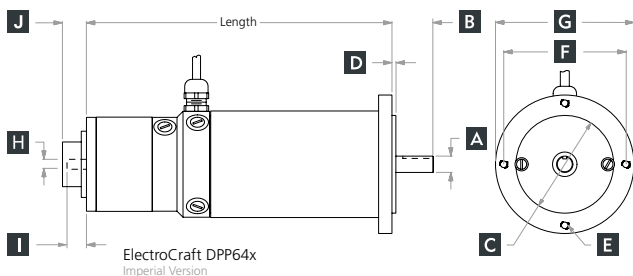
Product Name Frame Size Optional Tachometer Continuous Torque (oz-in) Voltage Rear Shaft Front Shaft Lead Option Encoder

b. **D P P** **6 4 2 M** **T** - **7 0** **V** **6 0** - **1 2 2** - **C**

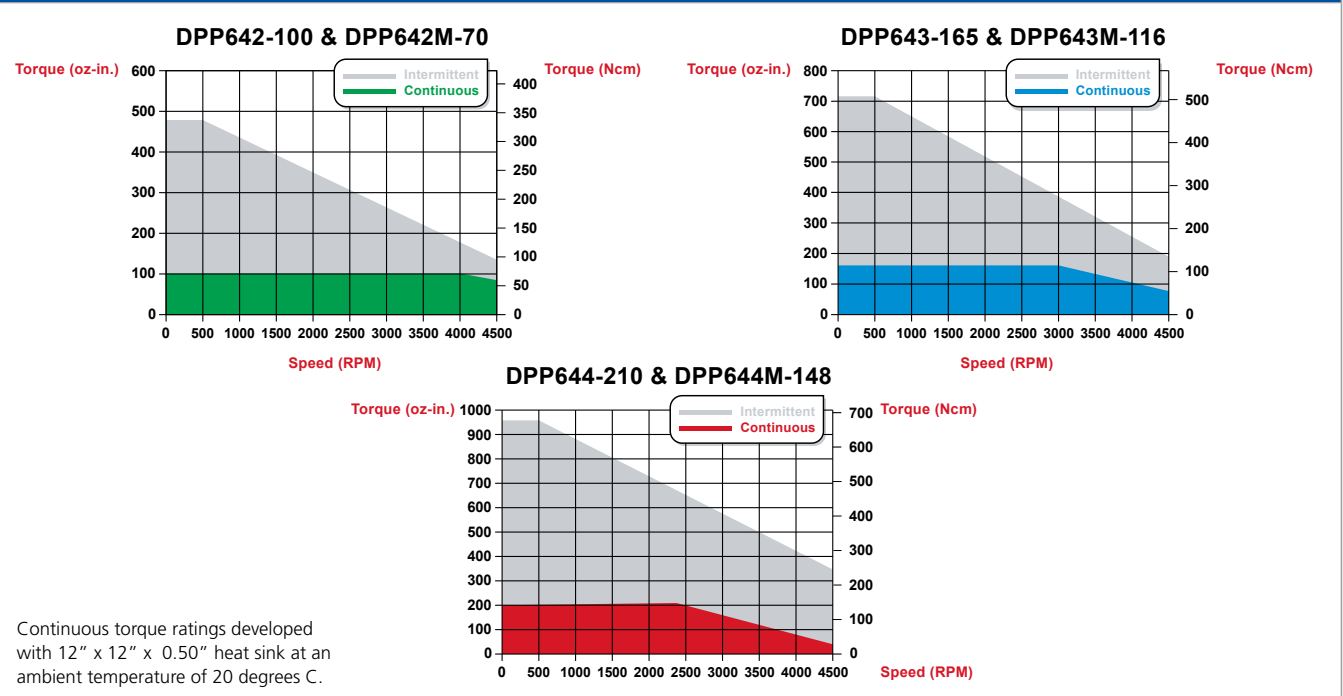
Product Name Frame Size Optional Metric Optional Tachometer Continuous Torque (Ncm) Voltage Rear Shaft Front Shaft Lead Option Encoder

Step 1: DPP640 & DPP640M Frame Size Drawing Key

| Model | MAX Length | MAX Length (with tachometer) | A Front Shaft Diameter | B Front Shaft Length | C Pilot Diameter | D Pilot Length (Ref) | E Mounting Hole Pattern (Ref) | F Mount Hole Spacing (Ref) | G Flange External Dimension (Ref) | H Rear Shaft Diameter | I Rear Shaft Length | J Encoder Length (Ref) |
|---------|------------|------------------------------|---------------------------|-------------------------|----------------------|-------------------------|---|-------------------------------|--------------------------------------|--------------------------|------------------------|---------------------------|
| DPP642 | 4.1 in | 6.9 in | 0.5000 in 0.4995 in | 1.282 in ±0.03 | 3.000 in 2.997 in | 0.12 in | [4] 1/4-20 UNC-2B THRU EQ SP on 3.750 in D.B.C. | 2.651 in | 4.25 in OD | 0.3750 in 0.3747 in | 0.70 in ±0.03 | 0.74 in |
| DPP643 | 5.7 in | 8.5 in | | | | | | | | | | |
| DPP644 | 6.7 in | 9.5 in | | | | | | | | | | |
| DPP642M | 106 mm | 175 mm | 12.00 mm 11.99 mm | 30 mm ±0.762 | N/A | N/A | [4] M6 x 1-6H 7.62 mm Deep Min EQ SP on 63.5 mm D.B.C. | 63.5 mm | 78 mm OD | 8.00 mm 7.99 mm | 19 mm ±0.584 | 18.8 mm |
| DPP643M | 146 mm | 215 mm | | | | | | | | | | |
| DPP644M | 173 mm | 242 mm | | | | | | | | | | |



Step 2: DPP640 Torque and Mechanical Data



| Stack Size Models | DPP642-100 / DPP642M-70 | DPP643-165 / DPP643M-116 | DPP644-210 / DPP644M-148 |
|--|-------------------------|--------------------------|--------------------------|
| Cont Stall Torque oz-in (Ncm) | 100 (70) | 165 (116) | 210 (148) |
| Peak Torque oz-in (Ncm) | 480 (339) | 775 (547) | 960 (678) |
| No Load Speed RPM | 4500 | 4500 | 4500 |
| Inertia oz-in-sec ² (g-cm ²) | 0.019 (1341.7) | 0.030 (2118.5) | 0.037 (2612.8) |
| Motor Weight lb (kg) | 6.1 (2.76) | 8.6 (3.90) | 10.1 (4.58) |
| Motor/Tach Weight lb (kg) | 8.0 (3.63) | 10.5 (4.76) | 12.0 (5.44) |

Step 3: Available Windings

| | 100V48 | 100V60 | 165V48 | 165V60 | 210V48 | 210V60 |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Imperial | 100V48 | 100V60 | 165V48 | 165V60 | 210V48 | 210V60 |
| Metric | 70V48 | 70V60 | 116V48 | 116V60 | 148V48 | 148V60 |
| Voltage (Vdc) | 48 | 60 | 48 | 60 | 48 | 60 |
| Voltage Constant V/kRPM | 13.7 | 17.5 | 19.3 | 24.8 | 25.2 | 32.4 |
| Torque Constant oz-in/A (Ncm/A) | 18.5 (13.1) | 23.6 (16.7) | 26.1 (18.4) | 33.5 (23.7) | 34.1 (24.1) | 43.8 (30.9) |
| Max Cont Current (A) | 6.1 | 4.8 | 6.2 | 5.5 | 6.9 | 5.4 |
| Peak Current (A) | 25.4 | 19.9 | 29.7 | 23.1 | 28.2 | 21.9 |

Optional: Tachometer Specifications

| Model | Voltage Constant V/kRPM | Tach Resistance (Ohms) | Tach Ripple Peak-Peak @ 1000 RPM | Increase Motor Inertia oz-in-sec ² (g-cm ²) |
|---------------|----------------------------|---------------------------|-------------------------------------|---|
| DPP640 Series | 14.0 | 80-120 | 5% | 0.002 (141.23) |

DPP

DPP680 : ElectroCraft DirectPower™ Plus | PMDC Motor

| Size in (mm) | Peak Torque oz-in (Ncm) | Speeds up to RPM |
|--------------|-------------------------|------------------|
| 3.25 in (83) | 1100 (777) | 5000 |



High-Torque. Long life.

Our DirectPower Plus 680 Series features a rugged, heavy-gauge steel housing construction for long-life and durability. The 680 series combines the newest winding technology with premium materials to provide an efficient product significantly extending use cycles for remotely powered applications. This motor includes dynamically balanced armatures, sealed ball bearings, and replaceable brushes.

To build your own motor, choose the:

1 - Frame Size (Imperial or Metric)

2 - Torque

3 - Winding

4 - Features (see page 39)

a. **D P P** **6 8 1** **T** - **9 0**

Product Name Frame Size Optional Tachometer Continuous Torque (oz-in)

b. **D P P** **6 8 1 M** **T** - **6 4**

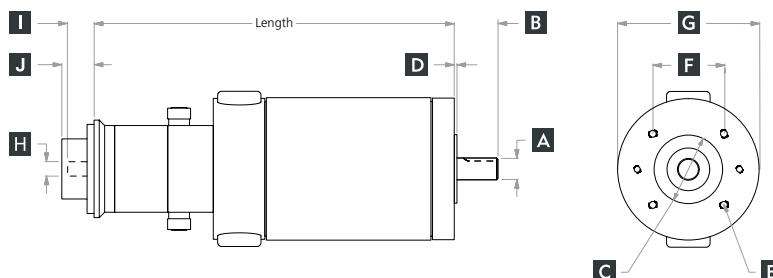
Product Name Frame Size Optional Metric Tachometer Continuous Torque (Ncm)

V **6 0** - **1 2 2** - **C**

Voltage Rear Shaft Front Shaft Lead Option Encoder

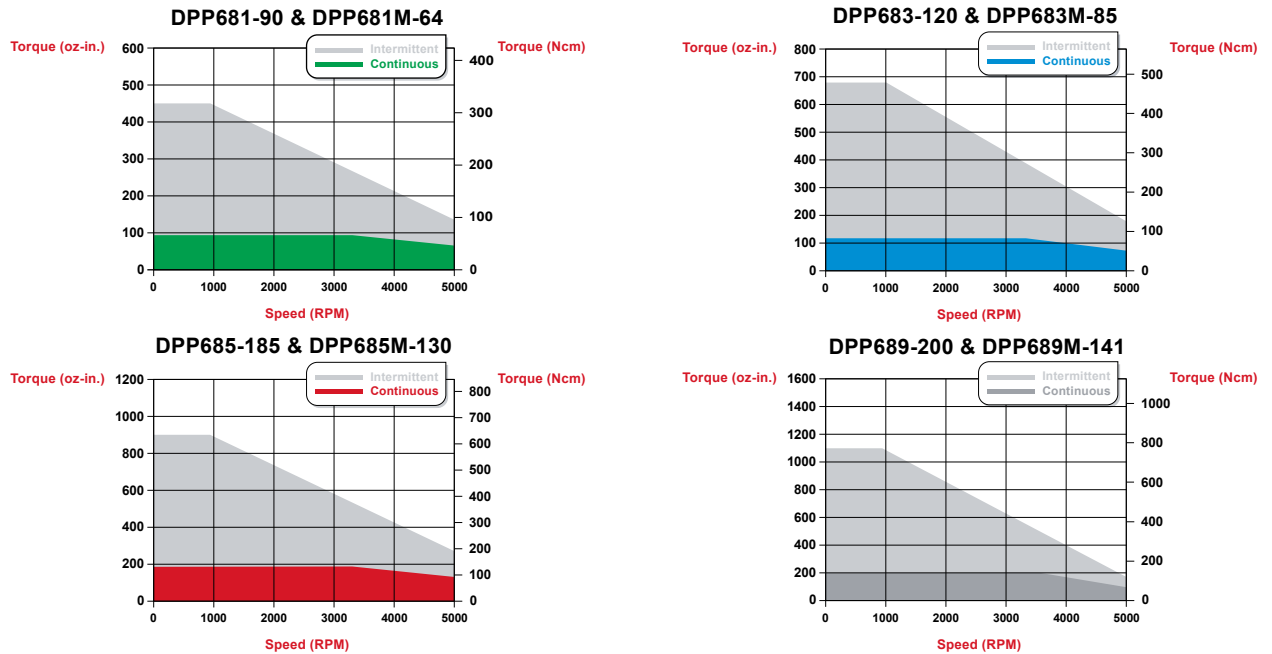
Step 1: DPP680 & DPP680M Frame Size Drawing Key

| Model | MAX Length | MAX Length (with tachometer) | A Front Shaft Diameter | B Front Shaft Length | C Pilot Diameter | D Pilot Length (Ref) | E Mounting Hole Pattern (Ref) | F Mount Hole Spacing (Ref) | G Flange External Dimension (Ref) | H Rear Shaft Diameter | I Rear Shaft Length | J Encoder Length (Ref) |
|---------|------------|------------------------------|------------------------|----------------------|----------------------|----------------------|---|----------------------------|-----------------------------------|--|---------------------|------------------------|
| DPP681 | 5.10 in | 7.81 in | 0.5000 in 0.4995 in | 1.000 in ±0.03 | 1.574 in 1.572 in | 0.062 in | [4] 10-32 UNC-28 0.50 in Deep Min EQ SP on 2.312 in D.B.C. | 1.635 in | 3.25 in OD | 0.3750 in 0.3747 in (motor only) | 0.70 in ±0.03 | 0.74 in |
| DPP683 | 5.70 in | 8.41 in | | | | | | | | | | |
| DPP685 | 6.82 in | 9.53 in | | | | | | | | | | |
| DPP689 | 7.62 in | 10.33 in | | | | | | | | | | |
| DPP681M | 132 mm | 199 mm | 12.00 mm 11.99 mm | 30.0 mm ±0.762 | N/A | N/A | [4] M6 x 1-6H 10 mm Deep Min EQ SP on 63.5 mm D.B.C. | 44.9 mm | 78 mm | 8.00 mm 7.99 mm (motor only) | 19 mm ±0.381 | 18.8 mm |
| DPP683M | 147 mm | 214 mm | | | | | | | | | | |
| DPP685M | 175 mm | 242 mm | | | | | | | | | | |
| DPP689M | 196 mm | 263 mm | | | | | | | | | | |



Other mounting options available upon request.

Step 2: DPP680 Torque and Mechanical Data



Continuous torque ratings developed with 12" x 12" x 0.50" heat sink at an ambient temperature of 20 degrees C.

| Stack Size Models | DPP681-90 / DPP681M-64 | DPP683-120 / DPP683M-85 | DPP685-185 / DPP685M-130 | DPP689-200 / DPP689M-141 |
|--|------------------------|-------------------------|--------------------------|--------------------------|
| Cont Stall Torque oz-in (Ncm) | 90 (64) | 120 (85) | 185 (131) | 200 (141) |
| Peak Torque oz-in (Ncm) | 450 (318) | 680 (480) | 950 (671) | 1100 (777) |
| No Load Speed RPM | 5000 | 5000 | 5000 | 5000 |
| Inertia oz-in-sec ² (g-cm ²) | 0.023 (1624.3) | 0.032 (2259.8) | 0.055 (3884.1) | 0.068 (4802.2) |
| Motor Weight lb (kg) | 6.0 (2.72) | 6.5 (2.95) | 7.0 (3.18) | 8.0 (3.63) |
| Motor/Tach Weight lb (kg) | 7.0 (3.18) | 7.5 (3.40) | 8.0 (3.63) | 9.0 (4.08) |

Step 3: Available Windings

| Imperial | 90V24 | 90V48 | 90V60 | 120V24 | 120V48 | 120V60 | 185V24 | 185V48 | 185V60 | 200V24 | 200V48 | 200V60 |
|---------------------------------|--------------|----------------|----------------|--------------|----------------|----------------|--------------|----------------|----------------|--------------|----------------|----------------|
| Metric | 64V24 | 64V48 | 64V60 | 85V24 | 85V48 | 85V60 | 130V24 | 130V48 | 130V60 | 141V24 | 141V48 | 141V60 |
| Voltage (Vdc) | 24 | 48 | 60 | 24 | 48 | 60 | 24 | 48 | 60 | 24 | 48 | 60 |
| Voltage Constant V/kRPM | 5.2 | 11.1 | 13.4 | 5.6 | 11.2 | 13.6 | 5.4 | 10.8 | 13.0 | 5.5 | 11.0 | 13.8 |
| Torque Constant oz-in/A (Ncm/A) | 7.1 (5.0) | 15.0 (10.6) | 18.1 (12.8) | 7.6 (5.3) | 15.1 (10.7) | 18.4 (13.0) | 7.3 (5.2) | 14.6 (10.3) | 17.6 (12.4) | 7.4 (5.2) | 14.9 (10.5) | 18.8 (13.3) |
| Max Cont Current (A) | 11.0 | 5.5 | 4.4 | 13.0 | 6.5 | 5.2 | 15.0 | 7.5 | 6.0 | 18.0 | 9.0 | 7.2 |
| Peak Current (A) | 63.5 | 30.1 | 24.9 | 89.0 | 44.9 | 37.0 | 90.0 | 64.0 | 54.1 | 90.0 | 73.7 | 58.9 |

Optional: Tachometer Specifications

| Model | Voltage Constant V/kRPM | Tach Resistance (Ohms) | Tach Ripple Peak-Peak @ 1000 RPM | Increase Motor Inertia oz-in-sec ² (g-cm ²) |
|---------------|-------------------------|------------------------|----------------------------------|--|
| DPP680 Series | 14.0 | 600-900 | 5% | 0.002 (141.23) |

DPP

DPP700 : ElectroCraft DirectPower™ Plus | PMDC Motor

| Size in (mm) | Peak Torque oz-in (Ncm) | Speeds up to RPM |
|--------------|-------------------------|------------------|
| 4.00 (102) | 2000 (1412) | 2400 |



High-Torque. Long life.

Our DirectPower Plus 700 Series features a rugged, heavy-gauge steel housing construction for long-life and durability. This series offers high output for low to mid voltages, high torque applications. This high-efficiency motor includes dynamically balanced armatures, sealed ball bearings, and replaceable brushes.

To build your own motor, choose the:

1 - Frame Size (Imperial or Metric)

2 - Torque

3 - Winding

4 - Features (see page 39)

a. **D P P** **7 0 1** — **1 5 0**

Product Name Frame Size Continuous Torque (oz-in)

b. **D P P** **7 0 1** **M** — **1 0 6**

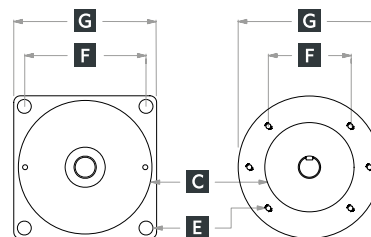
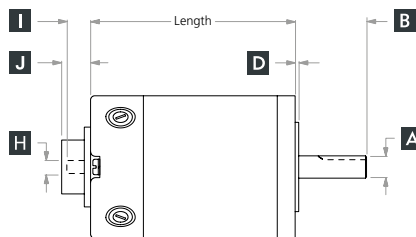
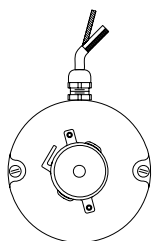
Product Name Frame Size Optional Metric Continuous Torque (Ncm)

V **9 0** — **1 2 2** — **C**

Voltage Rear Shaft Front Shaft Lead Option Encoder

Step 1: DPP700 & DPP700M Frame Size Drawing Key

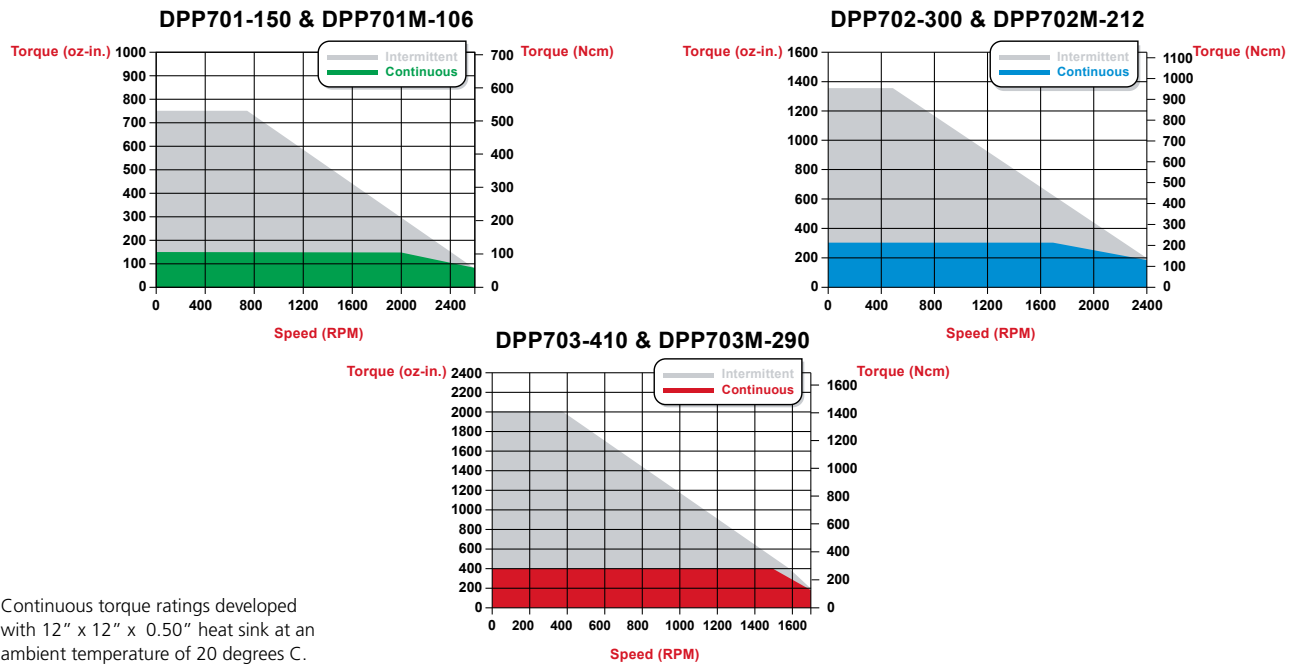
| Model | MAX Length | A | B | C | D | E | F | G | H | I | J |
|---------|------------|------------------------|--------------------|----------------------|--------------------|---|--------------------------|---------------------------------|------------------------|--------------------|----------------------|
| | | Front Shaft Diameter | Front Shaft Length | Pilot Diameter | Pilot Length (Ref) | Mounting Hole Pattern (Ref) | Mount Hole Spacing (Ref) | Flange External Dimension (Ref) | Rear Shaft Diameter | Rear Shaft Length | Encoder Length (Ref) |
| DPP701 | 4.75 in | 0.6250 in 0.6245 in | 2.000 in ±0.03 | 2.500 in 2.497 in | 0.100 in | [4] 10-32 UNC-28 0.50 in Deep Min EQ SP on 3.250 in D.B.C. | 2.298 in | 4.00 in OD | 0.3750 in 0.3747 in | 0.70 in ±0.03 | 0.74 in |
| DPP702 | 5.75 in | | | | | | | | | | |
| DPP703 | 6.75 in | | | | | | | | | | |
| DPP701M | 121 mm | 16.00 mm 15.99 mm | 40 mm ±0.762 | 95.00 mm 94.92 mm | 3.8 mm | [4] 10 mm DIA THRU EQ SP on 122.34 mm D.B.C. | 86.51 mm | 102 mm SQ | 8.00 mm 7.99 mm | 13.49 mm ±0.381 | 18.8 mm |
| DPP702M | 147 mm | | | | | | | | | | |
| DPP703M | 172 mm | | | | | | | | | | |



Metric shown above

Imperial shown above

Step 2: DPP700 Torque and Mechanical Data



| Stack Size Models | DPP701-150 / DPP701M-106 | DPP702-300 / DPP702M-212 | DPP703-410 / DPP703M-290 |
|--|--------------------------|--------------------------|--------------------------|
| Cont Stall Torque oz-in (Ncm) | 150 (106) | 300 (212) | 410 (290) |
| Peak Torque oz-in (Ncm) | 750 (530) | 1350 (953) | 2000 (1412) |
| No Load Speed RPM | 2850 | 2650 | 1850 |
| Inertia oz-in-sec ² (g-cm ²) | 0.10 (7061.6) | 0.15 (10592.3) | 0.20 (14123.1) |
| Motor Weight lb (kg) | 6.1 (2.8) | 8.5 (3.9) | 11.0 (5.0) |

Step 3: Available Windings

| Imperial | 150V24 | 150V48 | 150V60 | 150V90 | 300V24 | 300V48 | 300V60 | 300V90 | 410V24 | 410V48 | 410V60 | 410V90 |
|------------------------------------|---------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Metric | 106V24 | 106V48 | 106V60 | 106V90 | 212V24 | 212V48 | 212V60 | 212V90 | 290V24 | 290V48 | 290V60 | 290V90 |
| Voltage (Vdc) | 24 | 48 | 60 | 90 | 24 | 48 | 60 | 90 | 24 | 48 | 60 | 90 |
| Voltage Constant V/kRPM | 8.4 | 16.4 | 20.4 | 34.8 | 9.1 | 18.7 | 23.0 | 34.4 | 13.7 | 26.5 | 32.9 | 49.3 |
| Torque Constant oz-in/A (Ncm/A) | 11.3 (8.0) | 22.2 (15.7) | 27.6 (19.5) | 47.1 (33.3) | 12.3 (8.7) | 25.3 (17.9) | 31.1 (22.0) | 46.6 (32.9) | 18.5 (13.1) | 35.8 (25.3) | 44.4 (31.4) | 66.7 (47.1) |
| Max Cont Current (A) | 11.0 | 5.5 | 4.4 | 3.0 | 15.5 | 7.8 | 6.2 | 4.2 | 18.0 | 9.0 | 7.2 | 4.8 |
| Peak Current (A) | 66.2 | 33.8 | 27.1 | 15.9 | 90.0 | 53.3 | 43.5 | 29.0 | 90.0 | 55.9 | 45.0 | 30.0 |



Still need help?
Easily build your own motor at
www.configureamotor.com



Don't see exactly what you need?
Have ElectroCraft build you a custom winding, stack length or fully customized motor... that's our specialty!

DPP720 : ElectroCraft DirectPower™ Plus | PMDC Motor

| Size in (mm) | Peak Torque oz-in (Ncm) | Speeds up to RPM |
|--------------|-------------------------|------------------|
| 4.00 (105) | 2880 (2034) | 2400 |



High-Torque. Long life.

Our DirectPower Plus 720 Series features a rugged, heavy-gauge steel housing construction for long-life and durability. This high-efficiency motor offers smooth and highly accurate performance across the operating speed range. It includes dynamically balanced armatures, sealed construction for reliability in most environments, sealed ball bearings, and replaceable brushes.

To build your own motor, choose the:

1 - Frame Size (Imperial or Metric)

2 - Torque

3 - Winding

4 - Features (see page 39)

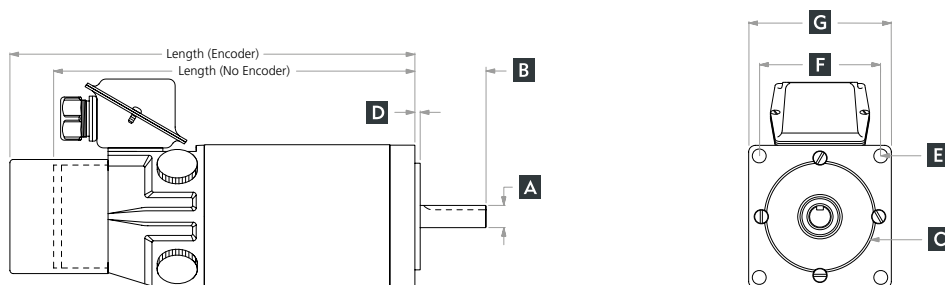
a. **D P P 7 2 6** (Product Name) **T** (Tachometer Standard) **3 5 5** (Continuous Torque (oz-in))

b. **D P P 7 2 6 M** (Product Name) **T** (Tachometer Standard) **2 5 1** (Continuous Torque (Ncm))

V 9 0 (Voltage) **1 2 2** (Rear Shaft, Front Shaft, Lead Option) **C** (Encoder)

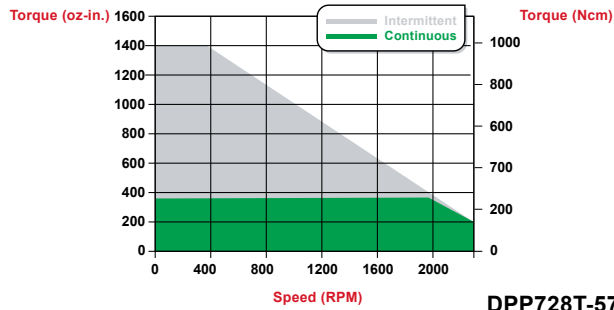
Step 1: DPP720 & DPP720M Frame Size Drawing Key

| Model | MAX Length Encoder | MAX Length No Encoder | A | B | C | D | E | F | G | H | I | J |
|----------|--------------------|-----------------------|------------------------|--------------------|----------------------|--------------------|---|--------------------------|---------------------------------|---------------------|-------------------|----------------------|
| | | | Front Shaft Diameter | Front Shaft Length | Pilot Diameter | Pilot Length (Ref) | Mounting Hole Pattern (Ref) | Mount Hole Spacing (Ref) | Flange External Dimension (Ref) | Rear Shaft Diameter | Rear Shaft Length | Encoder Length (Ref) |
| DPP726T | 10.67 in | 9.41 in | 0.6250 in 0.6245 in | 2.000 in ±0.03 | 3.000 in 2.997 in | 0.150 in | [4] 0.390 DIA THRU EQ SP on 4.817 D.B.C. | 3.406 in | 4.00 in SQ | N/A | N/A | N/A |
| DPP727T | 11.42 in | 10.16 in | | | | | | | | | | |
| DPP728T | 12.91 in | 11.65 in | | | | | | | | | | |
| DPP726MT | 271 mm | 239 mm | 16.00mm 15.99 mm | 40 mm ±0.762 | 95.00 mm 94.92 mm | 3.8 mm | [4] 10 mm DIA THRU EQ SP on 122.34 mm D.B. C. | 86.51 mm | 102 mm SQ | N/A | N/A | N/A |
| DPP727MT | 290 mm | 258 mm | | | | | | | | | | |
| DPP728MT | 328 mm | 296 mm | | | | | | | | | | |

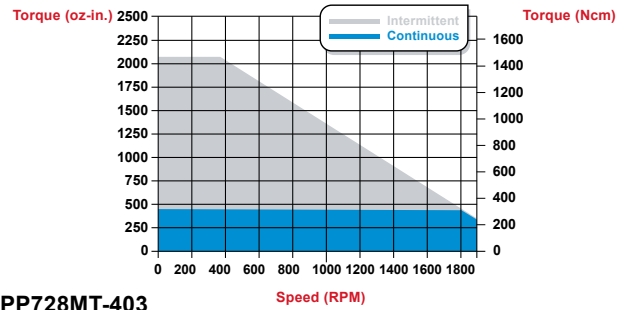


Step 2: DPP720 Torque and Mechanical Data

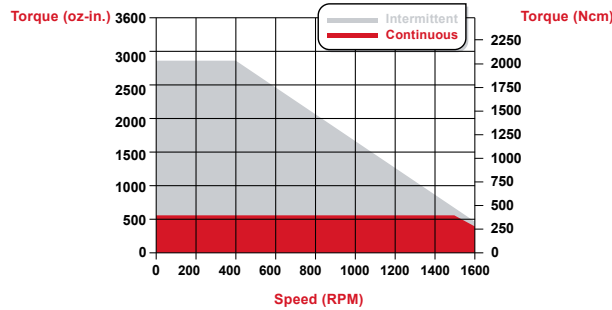
DPP726T-355 & DPP726MT-251



DPP727T-455 & DPP727MT-321



DPP728T-570 / DPP728MT-403



Continuous torque ratings developed with 12" x 12" x 0.50" heat sink at an ambient temperature of 20 degrees C.

| Stack Size Models | DPP726T-355 / DPP726MT-251 | DPP727T-455 / DPP727MT-321 | DPP728T-570 / DPP728MT-403 |
|---|----------------------------|----------------------------|----------------------------|
| Cont Stall Torque oz-in (Ncm) | 355 (251) | 455 (321) | 570 (403) |
| Peak Torque oz-in (Ncm) | 1440 (1017) | 2080 (1469) | 2880 (2034) |
| No Load Speed RPM | 2400 | 1900 | 1600 |
| Motor / Tach Inertia oz-in-sec ² (g-cm ²) | 0.100 (7061.6) | 0.110 (7767.7) | 0.175 (12357.7) |
| Motor Weight lb (kg) | 13 (5.9) | 15 (6.8) | 21 (9.5) |

Step 3: Available Windings

| Imperial | 355V60 | 355V90 | 355V120 | 455V60 | 455V90 | 455V120 | 570V60 | 570V90 | 570V120 |
|------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Metric | 251V60 | 251V90 | 251V120 | 321V60 | 321V90 | 321V120 | 403V60 | 403V90 | 403V120 |
| Voltage (Vdc) | 60 | 90 | 120 | 60 | 90 | 120 | 60 | 90 | 120 |
| Voltage Constant V/kRPM | 25.2 | 36.3 | 49.0 | 29.4 | 44.1 | 58.8 | 32.4 | 47.2 | 64.9 |
| Torque Constant oz-in/A (Ncm/A) | 34.2 (24.2) | 49.2 (34.7) | 66.2 (46.8) | 39.8 (28.1) | 59.6 (42.1) | 79.5 (56.1) | 43.8 (30.9) | 63.8 (45.1) | 87.8 (62.0) |
| Max Cont Current (A) | 11.6 | 8.2 | 5.9 | 12.6 | 8.2 | 6.3 | 15.2 | 10.6 | 7.6 |
| Peak Current (A) | 42.1 | 29.3 | 21.7 | 52.3 | 34.9 | 26.2 | 65.6 | 45.1 | 32.8 |

Tachometer Specifications

| Model | Voltage Constant V/kRPM | Tach Resistance (Ohms) | Tach Ripple Peak-Peak @ 1000 RPM |
|---------------|----------------------------|---------------------------|-------------------------------------|
| DPP720 Series | 14.0 | 85-115 | 5% |

DA43 : Electrocraft CompletePower™ | Servo Amplifier

| Power Supply Voltage | Nominal Current | Quadrants | Operation Mode | | | | | |
|----------------------|-----------------|-----------|----------------|-------------|---------------|----------|---------|---------|
| | | | Torque Control | Analog Pos. | Speed Control | | | |
| | | | | | I x R Comp. | DC-Tacho | Voltage | Encoder |
| 11 – 30 | 3 | 4 | ● | | ● | ● | ● | |



For Brush-Commutated Linear PMDC Motors. Up to 75 W.

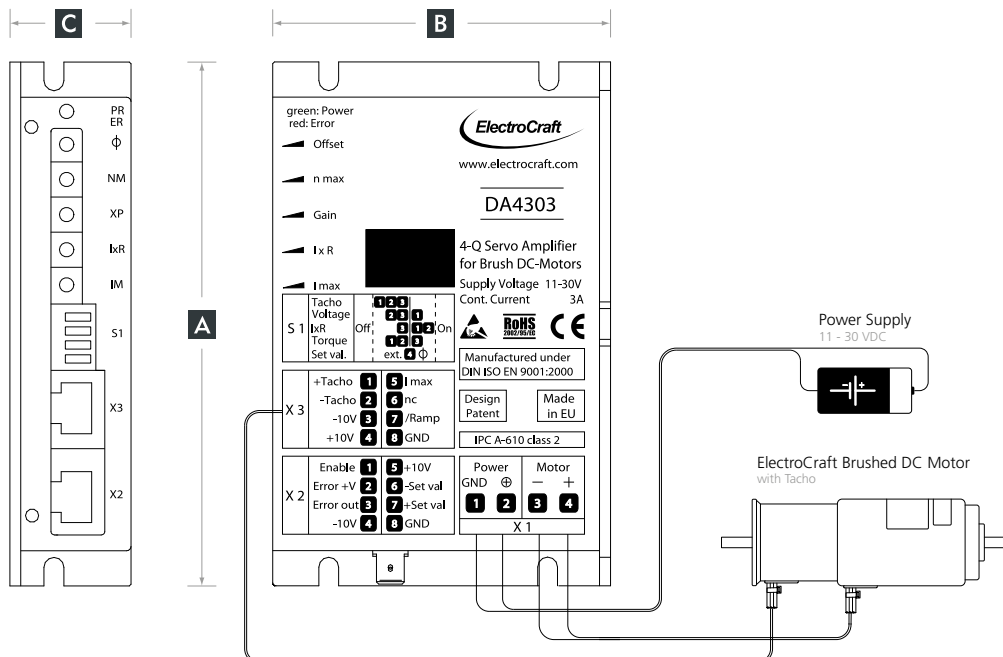
This servo-amplifier is built into a fully enclosed rugged miniature aluminum case. Linear servo amplifiers are ideal for low friction applications requiring high bandwidth, low noise and minimal distortion from the power electronics. The drive can be configured in the following modes of operation with simple dip switch settings: I/R compensation, Tach mode, Voltage mode and Torque mode. Input power of 30 VDC combined with a mountable heat-sink provides up to 75 Watts of power. Inputs include current limit, max set value and gain functions. The drive handles continuous currents up to 3 A. The linear power stage is protected against over-current and over-temperature.

Drive Model Example

| | | | | |
|------------------|----------|-------------|-----------------|--------------|
| D | A | 4 | 3 | 03 |
| Drive Technology | Version | # Quadrants | Voltage 10x VDC | Current Amps |

DA43 Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| DA4303 | 4.13 (105) | 2.56 (65) | 1.08 (28) | 4.94 (140) |



| DA43 Specifications | | | | | |
|--------------------------------------|----------------------------|---------------------------|-------------------------------|----------------------------------|----------------|
| Model Number | Power Supply Voltage (VDC) | Aux. Voltage Verror (VDC) | Nominal Current (Amps) | Max. Power with Heatsink (Watts) | Efficiency (%) |
| DA4303 | 11 - 30 | 5 - 30 | 3 | 75 | 97 |
| Control Inputs | | | | | |
| Set value | | | -10 to +10 VDC; Ri = 20 kOhm | | |
| Imax | | | 0 to +10 VDC; Ri > 10 kOhm | | |
| Tacho | | | max. 50 VDC; Ri = 75 kOhm | | |
| Enable | | | TTL/ +24 VDC; Ri = 47 kOhm | | |
| Ramp | | | active LO; Ri = 100 kOhm | | |
| Switches | | | | | |
| Tacho-, Voltage-, IxR-, Torque-Mode | | | Not set / Set | | |
| Set value via Offset | | | extern / intern | | |
| Outputs | | | | | |
| Auxiliary voltage source | | | +10 VDC / 10 mA each | | |
| Auxiliary voltage source | | | +10 VDC / 10 mA each | | |
| Error | | | TTL / 24 VDC; Ri = 50 Ohm | | |
| Display | | | | | |
| LEDs | | | green = Power / red = Error | | |
| Potentiometers | | | | | |
| Function of Potentiometer | | | Offset; nmax; Gain; IxR; Imax | | |
| Ambient conditions | | | | | |
| Operation temperature (°C) | | | -10 to +45 | | |
| Storage temperature (°C) | | | -40 to +85 | | |
| Humidity Range Not Condensing (%rel) | | | 20 to 80 % rel. | | |
| Mode of Operation | | | | | |
| Speed-control by voltage | Torque-control | IxR-compensation | Speed-control by DC-tacho | | |

| Available Accessories for DA43 (details see page 48) | | | |
|---|---|---|---|
| ASO-BM-70-30 | CAxxxx | MA0025 | WA2509 |
|  |  |  |  |
| HA2008 | HA2018 | HA2028 | |
|  |  |  | |

DA

DA47 : Electrocraft CompletePower™ | Servo Amplifier

| Power Supply Voltage | Nominal Current | Quadrants | Operation Mode | | | | | |
|----------------------|-----------------|-----------|----------------|-------------|---------------|----------|---------|---------|
| | | | Torque Control | Analog Pos. | Speed Control | | | |
| | | | | | I x R Comp. | DC-Tacho | Voltage | Encoder |
| 11 – 70 | 9 / 18 | 4 | ● | | ● | ● | ● | |



For Brush-Commutated PMDC Motors. Up to 1260 W.

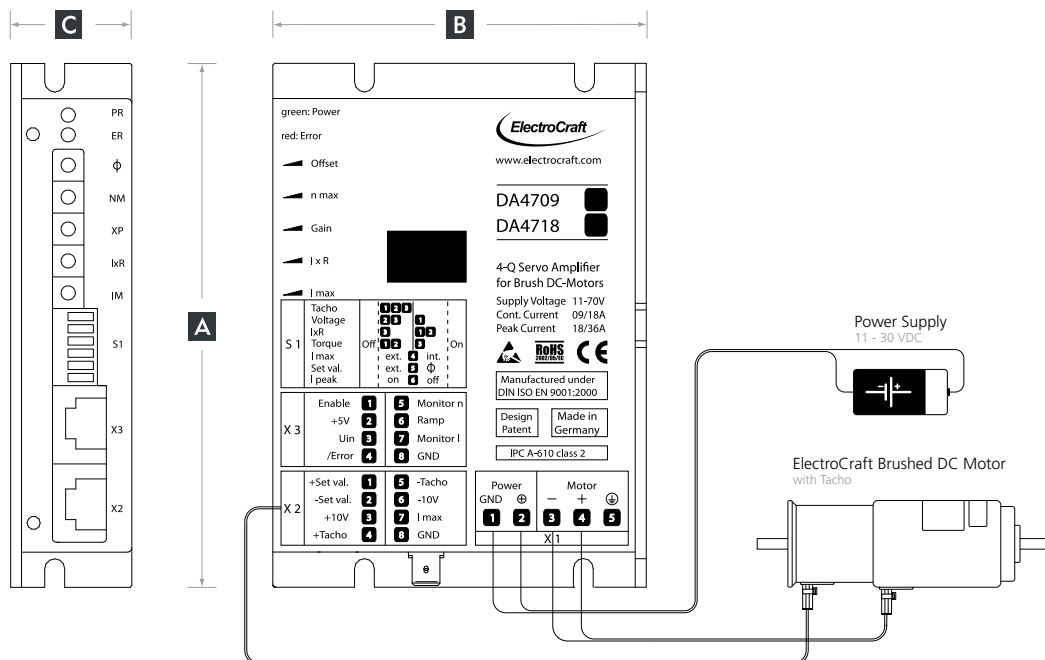
This four-quadrant PWM brush DC servo amplifier is fully enclosed in a small, rugged aluminum case which can be DIN-rail mounted or panel mounted for easy integration. The drive can be configured in the following modes of operation with simple dip switch settings: I/R compensation, Tach mode, Voltage mode and Torque mode. Both the 9 A and 18 A versions have twice the rated current available as peak current for intermittent overload conditions. This drive is protected against over-current and over-temperature and incorporates state of the art MOSFET technology for maximum efficiency. Connectivity is tool-free with RJ-45-connectors for input/outputs and push-type terminals for supply power and motor connections.

Drive Model Example



DA47 Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| DA4709 | 4.69 (119) | 3.35 (85) | 1.08 (28) | 7.76 (220) |
| DA4718 | | | | |



| DA47 Specifications | | | | | | | |
|--|----------------------------|---------------------------|---|-------------------------------|----------------------------------|---------------------------------------|----------------|
| Model Number | Power Supply Voltage (VDC) | Aux. Voltage Verror (VDC) | Nominal Current (Amps) | Peak current (Amps) | Max. Power with Heatsink (Watts) | Frequency of power output stage (kHz) | Efficiency (%) |
| DA4709 | 11 - 70 | 5 - 30 | 9 | 18 | 630 | 50 | 95 |
| DA4718 | | | 18 | 36 | 1260 | | |
| Control Inputs | | | | | | | |
| Set value | | | -10 to +10 VDC; Ri = 20 kOhm | | | | |
| Tacho | | | max. 50 VDC; Ri = 50 kOhm | | | | |
| Enable | | | TTL/ +24 VDC; Ri = 4.7 kOhm | | | | |
| I Limit | | | intern / extern | | | | |
| Ramp | | | TTL / +24 VDC; Ri = 4.7 kOhm | | | | |
| I _{max} | | | 0 to +10 VDC; Ri > 100 kOhm | | | | |
| Switches | | | | | | | |
| Tacho-, Voltage-, I _{xR} -, Torque-Mode | | | Not set / Set | | | | |
| Set value via Offset | | | extern / intern | | | | |
| I peak | | | on / off | | | | |
| Outputs | | | | | | | |
| Auxiliary voltage source | | | +5 VDC / 50 mA | | | | |
| Auxiliary voltage sources | | | ±10 VDC / 20 mA | | | | |
| Monitor I | | | 1 / 0.5 V/A; Ri = 100 Ohm | | | | |
| Monitor n | | | 0.1 V / 1 V _{motor} ; Ri = 100 Ohm | | | | |
| Supervisory output /Error | | | Open Collector / Push Pull / TTL / +24V; Ri = 50 Ohm | | | | |
| Display | | | | | | | |
| LEDs | | | green = Power / red = Error | | | | |
| Potentiometers | | | | | | | |
| Function of Potentiometer | | | Offset; n _{max} ; Gain; I _{xR} ; I _{max} | | | | |
| Ambient conditions | | | | | | | |
| Operation temperature (°C) | | | -10 to +45 | | | | |
| Storage temperature (°C) | | | -40 to +85 | | | | |
| Humidity Range Not Condensing (%rel) | | | 20 to 80 % rel. | | | | |
| Mode of Operation | | | | | | | |
| Speed-control by voltage | | Torque-control | | I _{xR} -compensation | | Speed-control by DC-tacho | |

Available Accessories for DA47 (details see page 48)

| ASO-BM-70-30 | IA210x | CAxxxx | HA3008 | HA3018 | HA3028 | MA0025 | WA2509 |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |

SCA-L : Electrocraft CompletePower™ | Servo Amplifier

| Model | Power Supply Voltage | Nominal Current | Quadrants | Operation Mode | | | | | |
|--------------|----------------------|-----------------|-----------|----------------|-------------|---------------|----------|---------|---------|
| | | | | Torque Control | Analog Pos. | Speed Control | | | |
| | | | | | | I x R Comp. | DC-Tacho | Voltage | Encoder |
| SCA-LE-30-03 | 11 - 30 | 3 | 4 | | | | | | ● |
| SCA-LS-30-03 | 11 - 30 | 3 | 4 | ● | | ● | ● | ● | |



For Brush-Commutated PMDC Motors. Up to 75 W.

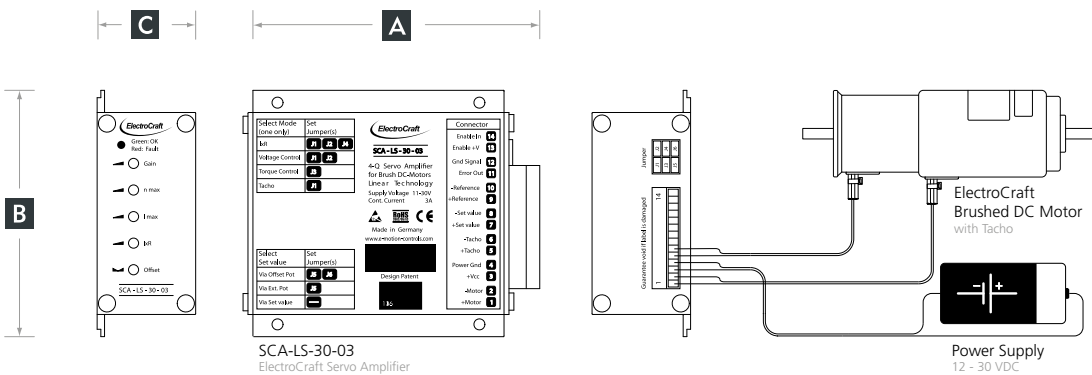
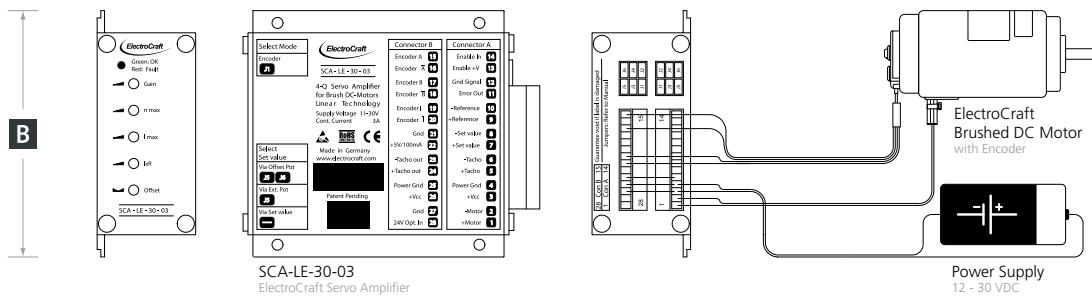
This linear four-quadrant brushless DC servo amplifier is fully enclosed in a rugged aluminum case which can be panel mounted for easy integration. The drive is available in several configurations depending on your control requirements. The drive handles continuous currents up to 3 Amps and is protected against over-current, over-temperature and motor short-circuit.

Drive Model Example

| | | | | | |
|-------------------------------|-----------------------|------------------------|---------------------|--------------------------|---------------------------|
| SC Drive Technology | A Case Type | L Drive Type | E Version | 30 Voltage VDC | 03 Current Amps |
|-------------------------------|-----------------------|------------------------|---------------------|--------------------------|---------------------------|

SCA-L Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| SCA-LE-30-03 | 4.76 (121) | 3.94 (100) | 1.57 (40) | 13.40 (380) |
| SCA-LS-30-03 | | | | 11.64 (330) |



| SCA-L Specifications | | | |
|--|----------------------------------|---|----------------------------------|
| Model Number | Power Supply Voltage (VDC) | Nominal Current (Amps) | Max. Power with Heatsink (Watts) |
| SCA-LE-30-03 | 11 - 30 | 3 | 75 |
| SCA-LS-30-03 | | | |
| Control Inputs | | | |
| Set value | | -10 to +10 VDC; Ri = 100 kOhm | |
| Tacho | | max. 50 VDC; Ri = 50 kOhm | |
| Enable | | +8 to +30 VDC; Ri = 5 kOhm | |
| Encoder input signals (SCA-LE only) | | Channel A & /A; B & /B; I & /I; max. 600 kHz ; TTL/ +5 to +24 VDC; Ri > 10 kOhm | |
| Outputs | | | |
| Auxiliary voltage source for encoder (SCA-LE only) | | +5 VDC / 100 mA | |
| Auxiliary voltage source | | +3,9 VDC / 20 mA | |
| Auxiliary voltage source | | -3,9 VDC / 20 mA | |
| Auxiliary voltage source Enable +V | | Connected with 4.7 kOhm to +VCC | |
| Error | | Open Collector max. +30 VDC; 20 mA | |
| Display | | | |
| LEDs | | green = OK / red = Fault | |
| Potentiometers | | | |
| Function of Potentiometer | | Gain; nmax; lmax; lxR; Offset | |
| Ambient conditions | | | |
| Operation temperature (°C) | | -10 to +45 | |
| Storage temperature (°C) | | -40 to +85 | |
| Humidity Range Not Condensing (%rel) | | 20 to 80 % rel. | |
| Mode of Operation | | | |
| SCA-LE-30-03 | Speed-control by Digital-Encoder | | |
| SCA-LS-30-03 | Speed-control by voltage | Torque-control | Speed-control by DC-tacho |

| Available Accessories for SCA-L (details see page 48) | |
|---|---|
| ASO-BM-70-30 | ASX-RM-01-01 |
|  |  |

SCA-S : Electrocraft CompletePower™ | Servo Amplifier

| Model | Power Supply Voltage | Nominal Current | Quadrants | Operation Mode | | | | | |
|--------------|----------------------|-----------------|-----------|----------------|-------------|---------------|----------|---------|---------|
| | | | | Torque Control | Analog Pos. | Speed Control | | | |
| | | | | | | I x R Comp. | DC-Tacho | Voltage | Encoder |
| SCA-SE-30-06 | 11 - 30 | 6 | 4 | | | | | | ● |
| SCA-SS-30-06 | 11 - 30 | 6 | 4 | ● | | ● | ● | ● | |



For Brush-Commutated PMDC Motors. Up to 150 W.

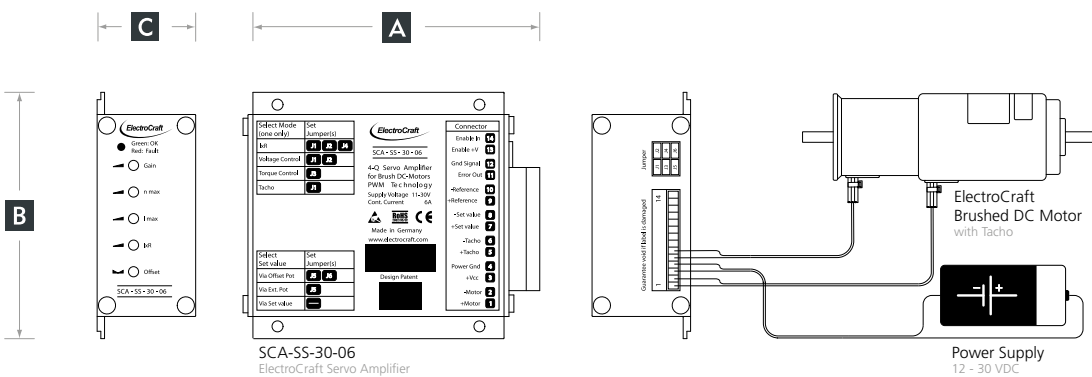
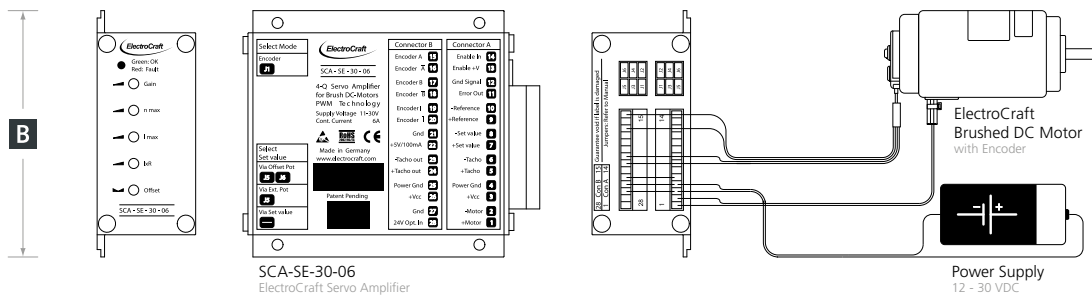
This PWM four-quadrant brushless DC servo amplifier is fully enclosed in a rugged aluminum case which can be panel mounted for easy integration. The drive is available in several configurations depending on your control requirements. The drive handles continuous currents up to 6 Amps and is protected against over-current, over-temperature and motor short-circuit .

Drive Model Example

| | | | | | |
|-------------------------------|-----------------------|------------------------|---------------------|--------------------------|---------------------------|
| SC Drive Technology | A Case Type | S Drive Type | E Version | 30 Voltage VDC | 06 Current Amps |
|-------------------------------|-----------------------|------------------------|---------------------|--------------------------|---------------------------|

SCA-S Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| SCA-SE-30-06 | 4.76 (121) | 3.94 (100) | 1.57 (40) | 13.76 (390) |
| SCA-SS-30-06 | | | | 12.00 (340) |



| SCA-S Specifications | | | | | |
|--|----------------------------------|------------------------|---|---------------------------------------|----------------|
| Model Number | Power Supply Voltage (VDC) | Nominal Current (Amps) | Max. Power with Heatsink (Watts) | Frequency of power output stage (kHz) | Efficiency (%) |
| SCA-SE-30-06 | 11 - 30 | 6 | 150 | 50 | 95 |
| SCA-SS-30-06 | | | | | |
| Control Inputs | | | | | |
| Set value | | | -10 to +10 VDC; Ri = 100 kOhm | | |
| Tacho | | | max. 50 VDC; Ri = 50 kOhm | | |
| Enable | | | +8 to +30 VDC; Ri = 5 kOhm | | |
| Encoder input signals (SCA-SE only) | | | Channel A & /A; B & /B; I & /I; max. 600 kHz ; TTL/ +5 to +24 VDC; Ri > 10 kOhm | | |
| Outputs | | | | | |
| Auxiliary voltage source | | | +3.9 VDC / 20 mA | | |
| Auxiliary voltage source | | | -3.9 VDC / 20 mA | | |
| Auxiliary voltage source for encoder (SCA-SE only) | | | +5 VDC / 100 mA | | |
| Auxiliary voltage source Enable +V | | | Connected with 27 kOhm to +VCC | | |
| Supervision output /Error | | | Open Collector max. +30 VDC; 20 mA | | |
| Display | | | | | |
| LEDs | | | green = OK / red = Fault | | |
| Potentiometers | | | | | |
| Function of Potentiometer | | | Gain; nmax; lmax; lxF; Offset | | |
| Ambient conditions | | | | | |
| Operation temperature (°C) | | | -10 to +45 | | |
| Storage temperature (°C) | | | -40 to +85 | | |
| Humidity Range Not Condensing (%rel) | | | 20 to 80 % rel. | | |
| Mode of Operation | | | | | |
| SCA-SE-30-06 | Speed-control by Digital-Encoder | | | | |
| SCA-SS-30-06 | Speed-control by voltage | Torque-control | lxF-compensation | Speed-control by DC-tacho | |

| Available Accessories for SCA-S (details see page 48) | | |
|---|---|---|
| ASO-BM-70-30 | ASX-RM-01-01 | IA210x |
|  |  |  |

SCA-SS : Electrocraft CompletePower™ | Servo Amplifier

| Power Supply Voltage | Nominal Current | Quadrants | Operation Mode | | | | | |
|----------------------|-----------------|-----------|----------------|-------------|---------------|----------|---------|---------|
| | | | Torque Control | Analog Pos. | Speed Control | | | |
| | | | | | I x R Comp. | DC-Tacho | Voltage | Encoder |
| 11 – 70 | 10 / 30 | 4 | ● | ● | ● | ● | ● | ● |



For Brush-Commutated PMDC Motors. Up to 2100 W.

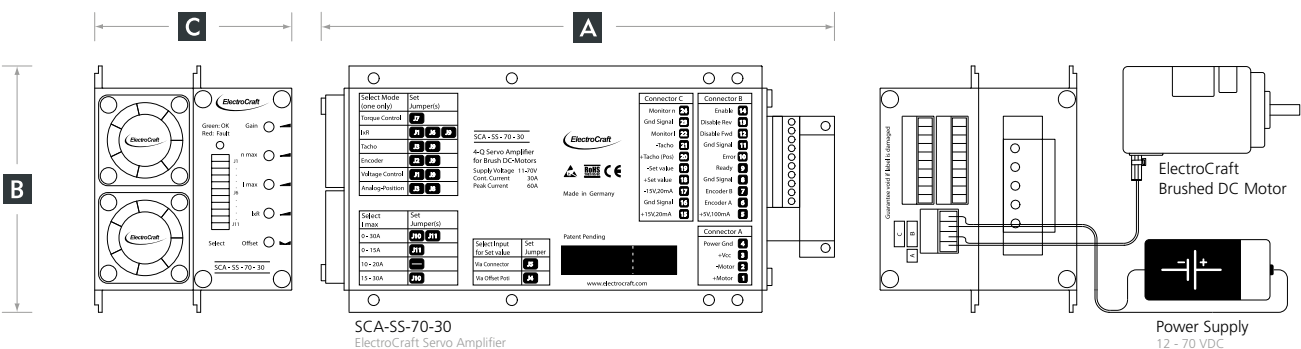
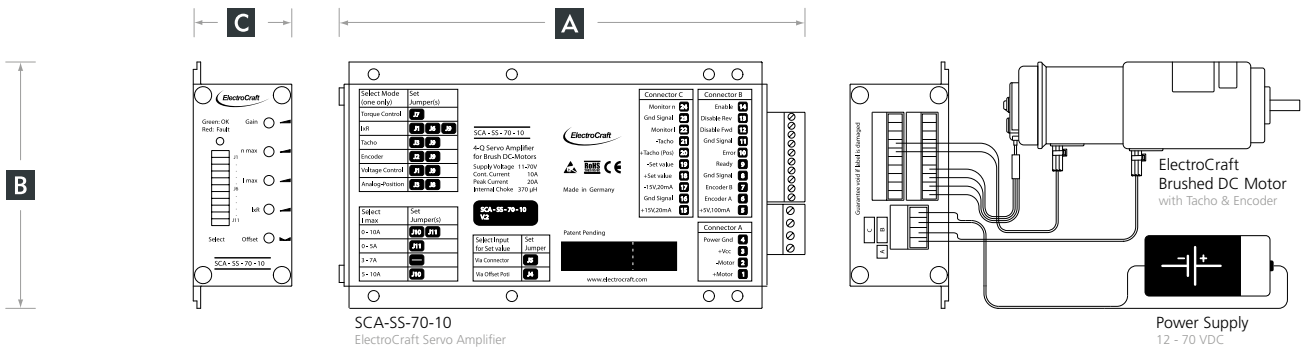
This PWM four-quadrant brushless DC servo amplifier is fully enclosed in a rugged aluminum case which can be panel mounted for easy integration. The drive can be configured in a variety of torque and speed control modes with the mode of operation being set by simple DIP switches. The drive handles continuous currents up to 30 Amps and provides a peak current of 60 Amps. The drive is protected against over-current, over-temperature, motor short-circuit and incorporates state of the art MOSFET technology for maximum efficiency. Connectivity is achieved with simple screw-terminals for control/feedback inputs, supply power and motor connections.

Drive Model Example

| | | | | | |
|-------------------------------|-----------------------|------------------------|---------------------|--------------------------|---------------------------|
| SC Drive Technology | A Case Type | S Drive Type | S Version | 70 Voltage VDC | 10 Current Amps |
|-------------------------------|-----------------------|------------------------|---------------------|--------------------------|---------------------------|

SCA-SS Outline Drawing

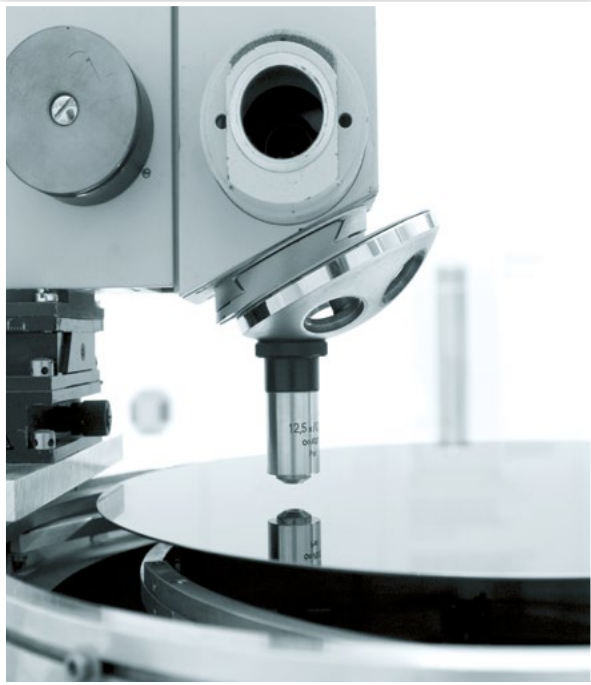
| Model | A | B | C | Weight oz (g) |
|--------------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| SCA-SS-70-10 | 7.09 (180) | 3.94 (100) | 1.57 (40) | 26.10 (740) |
| SCA-SS-70-30 | 7.87 (200) | 3.94 (100) | 3.15 (80) | 40.57 (1150) |



| SCA-SS Specifications | | | | | | |
|---|----------------------------|---------------------------|--|----------------------------------|---------------------------------------|----------------|
| Model Number | Power Supply Voltage (VDC) | Nominal Current (Amps) | Peak current (Amps) | Max. Power with Heatsink (Watts) | Frequency of power output stage (kHz) | Efficiency (%) |
| SCA-SS-70-10 | 11 - 70 | 10 | 20 | 700 | 49 | 95 |
| SCA-SS-70-30 | | 30 | 60 | 2100 | | |
| Control Inputs | | | | | | |
| Set v (Set value) | | | -10 to +10 VDC; Ri = 20 kOhm | | | |
| Encoder input signals | | | Channel A, B; max. 100 kHz; TTL / +5 VDC; Ri = 1kOhm | | | |
| Tacho | | | max. 50 VDC; Ri = 100 kOhm | | | |
| Enable | | | +8 to +30 VDC; Ri = 4.5 kOhm | | | |
| Disable Rev | | | +8 to +30 VDC; Ri = 4.5 kOhm | | | |
| Disable Fwd | | | +8 to +30 VDC; Ri = 4.5 kOhm | | | |
| Outputs | | | | | | |
| Auxiliary voltage source for hall sensors | | | +5 VDC / 100 mA | | | |
| Auxiliary voltage source | | | +15 VDC / 20 mA | | | |
| Auxiliary voltage source | | | -15 VDC / 20 mA | | | |
| Monitor I | | | 0.5 / 0.16 V/A ; Ri = 10 kOhm | | | |
| Monitor n | | | 10 VDC at max. speed; Ri = 10 kOhm | | | |
| Ready | | | Open Collector max. +30 VDC; 20 mA | | | |
| Error | | | Open Collector max. +30 VDC ; 20 mA | | | |
| Display | | | | | | |
| LEDs | | | green = OK / red = Fault | | | |
| Potentiometers | | | | | | |
| Function of Potentiometer | | | Gain; nmax; lmax; lxF; Offset | | | |
| Ambient conditions | | | | | | |
| Operation temperature (°C) | | | -10 to +45 | | | |
| Storage temperature (°C) | | | -40 to +85 | | | |
| Humidity Range Not Condensing (%rel) | | | 20 to 80 % rel. | | | |
| Mode of Operation | | | | | | |
| Torque-control | lxF-compensation | Speed-control by DC-tacho | Speed-control by encoder | Speed-control by voltage | Analog-positioning | |

| Available Accessories for SCA-SS (details see page 48) | | |
|---|---|---|
| ASO-BM-70-30 | ASX-RM-01-01 | IA210x |
|  |  |  |

ELECTROCRAFT
PRO SERIES



Precision positioning allows microscopic inspection and analysis



Programmable Servo Drive

Compact drive solution for rotary or linear brushless, stepper or PMDC brush motors.

The ElectroCraft PRO Series Programmable Servo Drives are based on a new design concept offering a cost effective, compact and modular solution for the control of rotary or linear brushless, stepper or PMDC brush motors of powers up to 385W, with 48V nominal voltage.

Designed to support both low and high-volume applications, the ElectroCraft PRO Series drive integrates advanced motor control and motion control functionality in a single plug-in module or stand-alone drive. The PRO Series Drives offer a flexible and modular solution in two form factors: PCB Mount (PE models) or built into a stand-alone package with pluggable connectors (SA models). With the comprehensive and flexible motion instruction set, the PRO Series Drives are intelligent drives that are programmable for many applications and levels of experience.



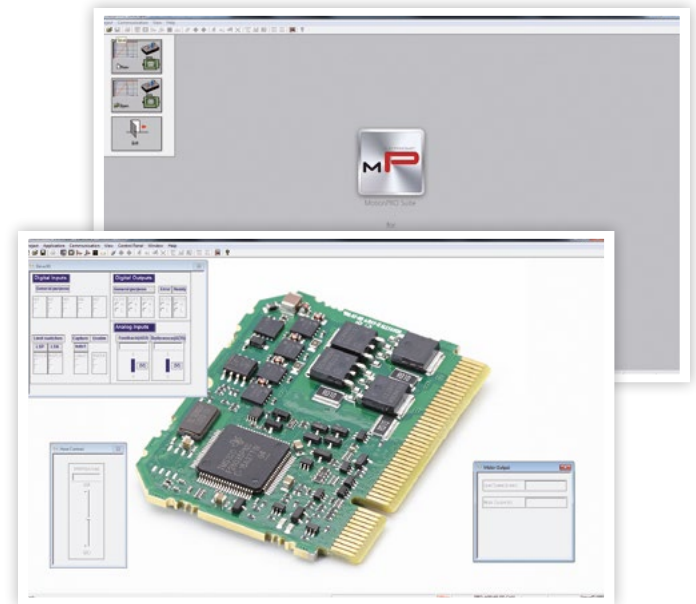
The drive can operate:

- As a single-axis motion controller, autonomously running the program residing in its non-volatile memory.
- As an intelligent slave executing motion sequences triggered by input lines.
- As a part of a multi-axis, distributed motion control solution in either stand-alone or slave configurations.
- As an intelligent slave executing motion sequences triggered by commands received via RS-232 or CAN bus communication.

Coordinated motion helps advance medical diagnostics

MotionPRO Suite User Interface

Easy configuration, tuning and programming



The configuration, tuning and programming of the PRO-A04V36 drive is easy with ElectroCraft's powerful MotionPRO Suite user interface.

Flexibility – Control schemes supported by the PRO-A04V36x Drive

| Motor Types (rotary or linear) | Torque Control | Speed Control | Position Control |
|--------------------------------|----------------|---------------|------------------|
| Brushless | ✓ | ✓ | ✓ |
| Stepper | ✓ | ✓ | ✓ |
| PMDC Brush | ✓ | ✓ | ✓ |

Motor – sensor configurations

| Motor Types | Brushless | Stepper (2-phase) | PMDC Brush |
|------------------------|-----------|-------------------|------------|
| Incr. Encoder | ✓ | ✓ | ✓ |
| Incr. Encoder + Hall | ✓ | | |
| Analog Sin/Cos encoder | ✓ | | |
| Linear Halls | ✓ | | |
| Tacho | | | ✓ |
| Open-loop (no sensor) | | ✓ | |

NOTE: SSI, EnDAT, BiSS encoders and Resolver feedback is possible with an additional feedback extension module

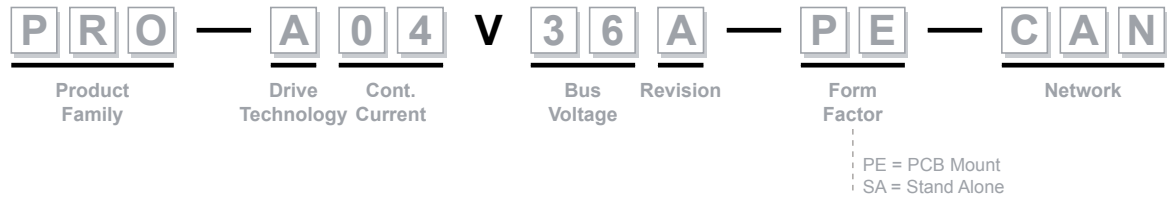
Features

- Fully digital servo drive suitable for the control of rotary or linear brushless, stepper or PMDC brush motors
- Very compact design
- Standard PCIe 4x mating connectors (PE Versions)
- Sinusoidal or trapezoidal (Hall-based) control of brushless motors
- Open or closed-loop control of 2-phase stepper motors
- Various modes of operation, including: torque, speed or position control; position or speed profiles, external analogue reference or sent via communication bus
- Comprehensive motion instruction set for the definition and execution of motion sequences
- CAN-Bus 2.0B up to 1 Mbit/s (CANopen (CiA 301v4.2 and 402v3.0) protocols)
- Single power supply: 11-48V; optional logic supply: 9-36V
- Digital and analogue I/Os:
 - 8 Digital inputs: 5-36V, NPN [Enable, 2 Limit switches, plus 5 general purpose]
 - 5 Digital outputs: 5-36V, 0.5A, 5 NPN open-collector [Ready, Error, plus 3 general purpose]
 - 2 Analogue inputs: 12-bit, 0-5V [Reference, Feedback or general-purpose]
- Standalone operation with stored motion sequences
- RS-232 serial communication
- Switching Frequency up to 100kHz
- Operating ambient temperature: 0-40°C
- Feedback devices supported:
 - Incremental quad encoder (single-ended, open collector and differential)
 - Analogue sine/cosine incremental encoder (differential 1Vpp)
 - Digital and linear Hall sensors
 - Support for absolute feedback (SSI, BiSS, EnDAT and resolver via additional extension module)
- Hardware protections: short-circuit (between motor phases and from motor phases to GND), over-voltage, under-voltage and I²t

PRO-A04V36: PRO Series | Programmable Servo Drive

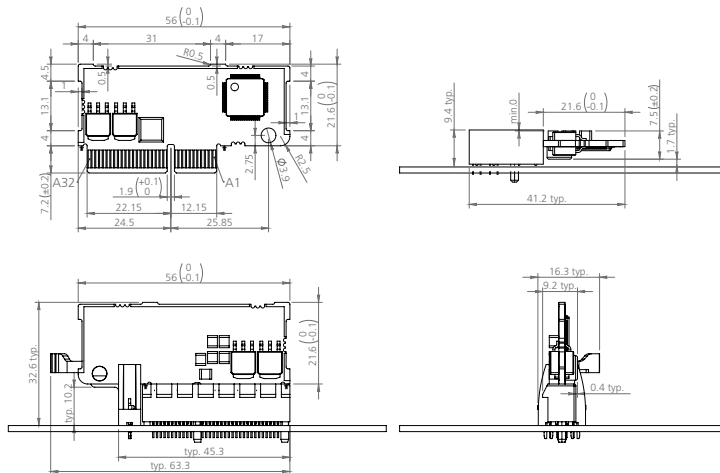


Drive Model Example



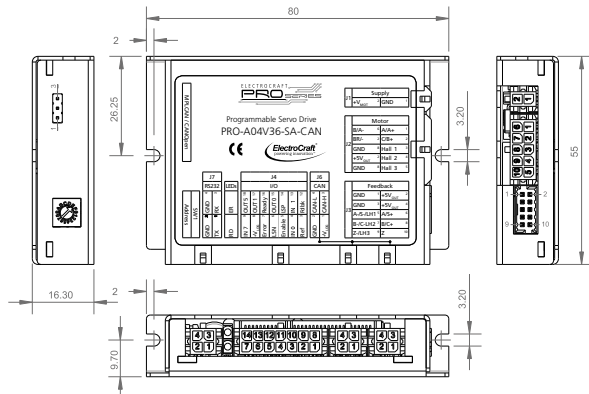
PCB Mount PRO-A04V36x-PE-CAN Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------------------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| PRO-A04V36A-PE-CAN | 2.2 (56) | 1.1 (28.8) | 0.3 (7.9) | 0.35 (10) |



Stand-alone PRO-A04V36x-SA-CAN Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------------------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| PRO-A04V36A-SA-CAN | 3.15 (80) | 2.17 (55) | 0.64 (16.3) | 2.5 (70) |



Electrical Specifications

| | | | |
|--|--------------|---------|------|
| Maximum DC Supply Voltage: motor & logic | | 36 | volt |
| Maximum continuous current | Peak of sine | 4 | amp |
| | RMS | 2.8 | amp |
| Peak current (2.4 sec. max.) | Peak of sine | 10 | amp |
| | RMS | 7.1 | amp |
| Nominal switching frequency | | 20 – 60 | kHz |

Input

| Logic Supply Input (+V _{LOG}) | | Min. | Typ. | Max. | Units |
|---|--|------|------|------|-----------------|
| Supply Voltage | Nominal values | 7 | | 36 | V _{DC} |
| | Absolute maximum values, drive operating but outside guaranteed parameters | 4.9 | | 40 | V _{DC} |
| | Absolute maximum values, continuous | -0.7 | | 42 | V _{DC} |
| | Absolute maximum values, surge (duration ≤ 10ms) | -1 | | +45 | V |
| Supply Current | +V _{LOG} = 7V | | 125 | 300 | mA |
| | +V _{LOG} = 12V | | 80 | 200 | |
| | +V _{LOG} = 24V | | 50 | 125 | |
| | +V _{LOG} = 40V | | 40 | 100 | |
| Motor Supply Input (+V _{MOT}) | | Min. | Typ. | Max. | Units |
| Supply Voltage | Nominal values | 9 | | 36 | V _{DC} |
| | Absolute maximum values, drive operating but outside guaranteed parameters | 8.5 | | 40 | V _{DC} |
| | Absolute maximum values, continuous | -0.7 | | 42 | V _{DC} |
| | Absolute maximum values, surge (duration ≤ 10ms) | -1 | | +45 | V |
| Supply Current | Idle | | 1 | 5 | mA |
| | Operating | -10 | ±4 | +10 | A |
| | Absolute maximum value, short-circuit condition (duration ≤ 10ms) | | | 15 | A |

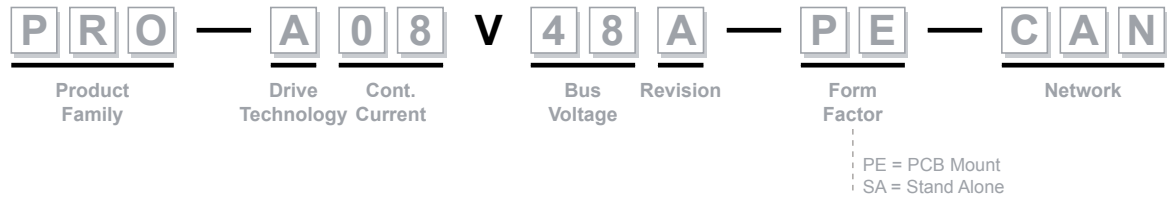
Output

| Motor Outputs (A/A+, B/A-, C/B+, BR/B-) | | Min. | Typ. | Max. | Units |
|---|--|------------------|------|------|-------|
| Nominal output current, continuous | DC brushed, steppers and BLDC motors with Hall-based trapezoidal control | | | 4 | A |
| | Brushless motors with sinusoidal control (Peak of Sine Value) | | | 4 | |
| | Brushless motors with sinusoidal control (sinusoidal effective RMS value) | | | 2.82 | |
| Motor output current, peak | maximum 2.5s | -10 | | +10 | A |
| Short-circuit protection threshold | measurement range | | ±13 | ±15 | A |
| Short-circuit protection delay | | 5 | 10 | | µs |
| On-state voltage drop | Nominal output current; including typical mating connector contact resistance | | ±0.3 | ±0.5 | V |
| Off-state leakage current | | | ±0.5 | ±1 | mA |
| Motor inductance (phase to phase) | Recommended value, for current ripple max. ±5% of full range; +V _{MOT} = 36 V | F _{PWM} | | | µH |
| | | 20 kHz | 250 | | |
| | | 40 kHz | 120 | | |
| | | 60 kHz | 90 | | |

PRO-A08V48: PRO Series | Programmable Servo Drive

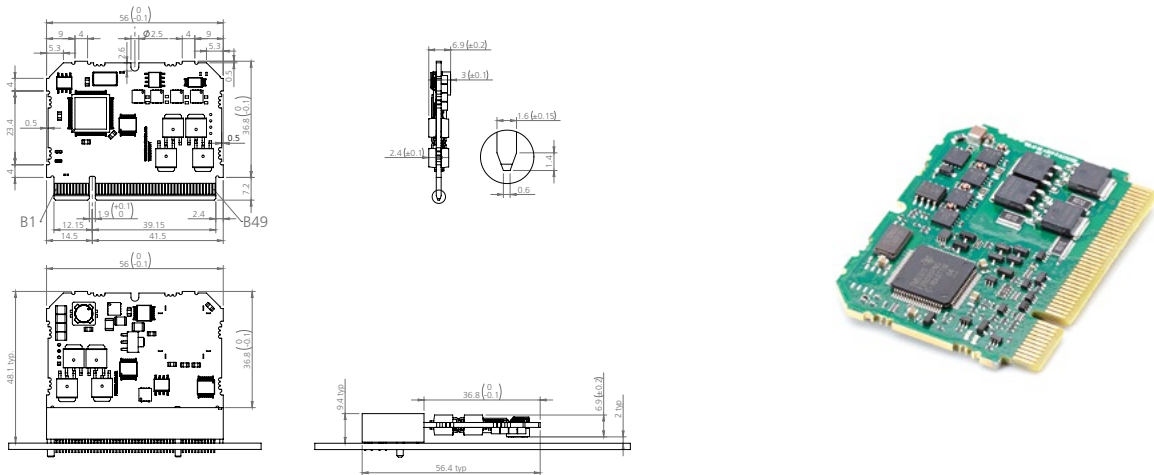


Drive Model Example



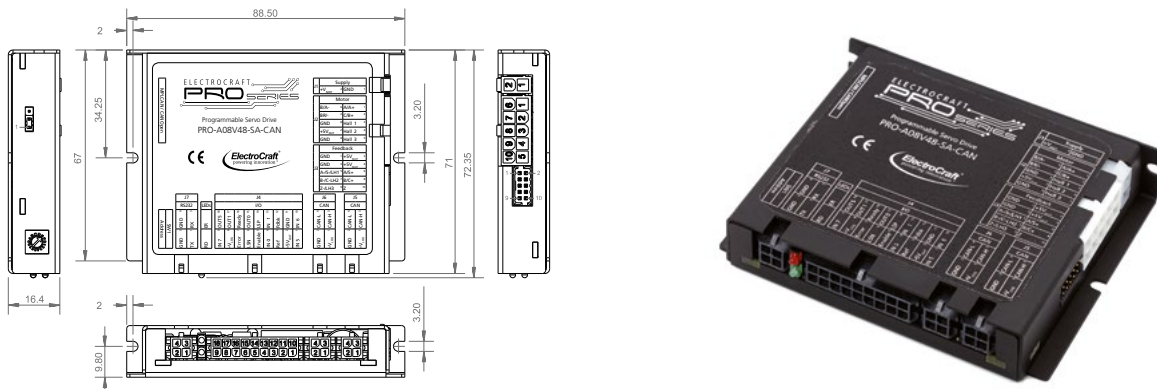
PCB Mount PRO-A08V48x-PE-CAN Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------------------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| PRO-A08V48A-PE-CAN | 2.2 (56) | 1.73 (48.1) | 0.27 (8.9) | 0.56 (16) |



Stand-alone PRO-A08V48x-SA-CAN Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------------------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| PRO-A08V48A-SA-CAN | 3.49 (95) | 2.85 (79) | 0.65 (19.5) | 3.9 (110) |

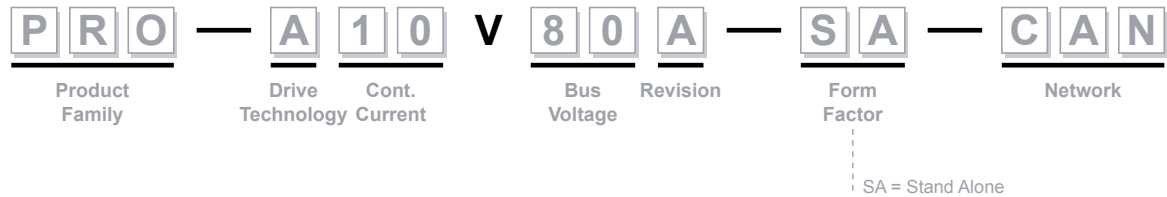


| Electrical Specifications | | | | | |
|---|--|------------------|------|------|-----------------|
| Maximum DC Supply Voltage | Motor | 48 | volt | | |
| | Logic | 36 | volt | | |
| Maximum continuous current | Peak of sine | 8 | amp | | |
| | RMS | 5.7 | amp | | |
| Peak current (2.4 sec. max.) | Peak of sine | 20 | amp | | |
| | RMS | 14.1 | amp | | |
| 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 ≤ 10ms) | -1 | | +45 | V |
| Supply Current | +V _{LOG} = 7V | | 125 | 320 | mA |
| | +V _{LOG} = 12V | | 80 | 220 | |
| | +V _{LOG} = 24V | | 50 | 145 | |
| | +V _{LOG} = 40V | | 40 | 120 | |
| Motor Supply Input (+V _{MOT}) | | Min. | Typ. | Max. | Units |
| Supply Voltage | Nominal values | 11 | 48 | 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 ≤ 10ms) | -1 | | +57 | V |
| Supply Current | Idle | | 1 | 5 | mA |
| | Operating | -20 | ±8 | +20 | A |
| | Absolute maximum value, short-circuit condition (duration ≤ 10ms) | | | 26 | A |
| Output | | | | | |
| Motor Outputs (A/A+, B/A-, C/B+, BR/B-) | | Min. | Typ. | Max. | Units |
| Nominal output current, continuous | DC brushed, steppers and BLDC motors with Hall-based trapezoidal control | | | 8 | A |
| | Brushless motors with sinusoidal control (Peak of Sine Value) | | | 8 | |
| | Brushless motors with sinusoidal control (sinusoidal effective RMS value) | | | 5.66 | |
| Motor output current, peak | maximum 2.5s | -20 | | +20 | A |
| Short-circuit protection threshold | measurement range | | ±26 | ±30 | A |
| Short-circuit protection delay | | 5 | 10 | | µS |
| On-state voltage drop | Nominal output current; including typical mating connector contact resistance | | ±0.3 | ±0.5 | V |
| Off-state leakage current | | | ±0.5 | ±1 | mA |
| Motor inductance (phase to phase) | Recommended value, for current ripple max. ±5% of full range; +V _{MOT} = 36 V | F _{PWM} | | | µH |
| | | 20 kHz | 250 | | |
| | | 40 kHz | 120 | | |
| | | 60 kHz | 90 | | |

PRO-A10V80: PRO Series | Programmable Servo Drive



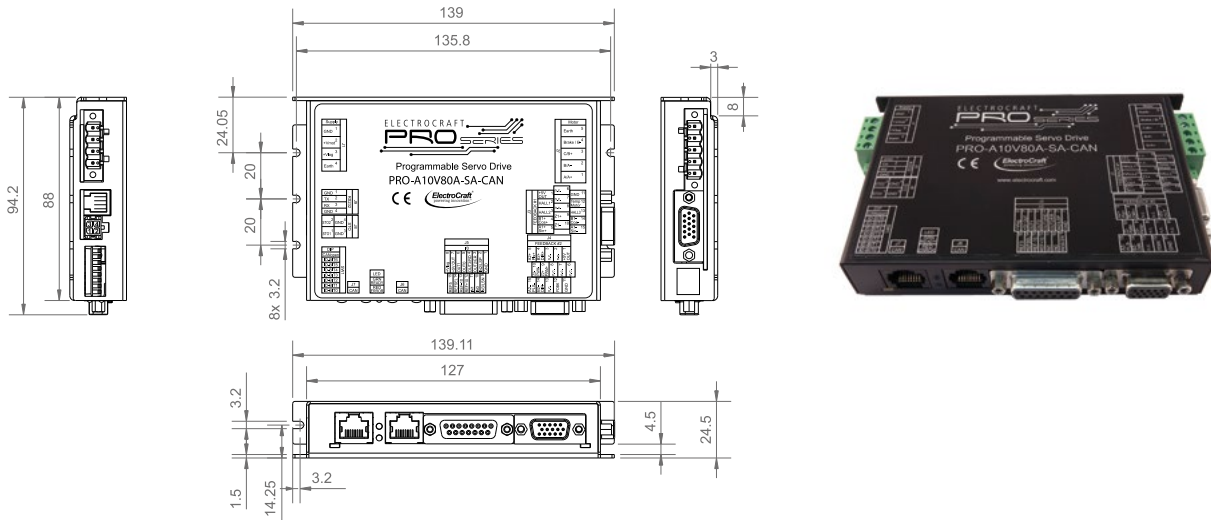
Drive Model Example



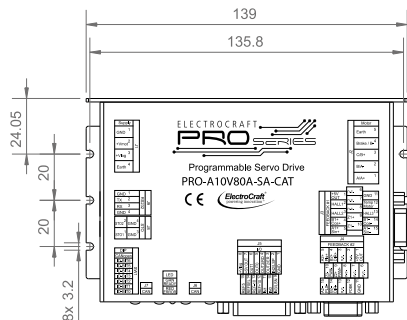
Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------------------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| PRO-A10V80A-SA-CAN | 5.47 (139) | 3.7 (94.2) | 0.96 (24.5) | 8.5 (240) |

PRO-A10V80A-SA-CAN



PRO-A10V80A-SA-CAT

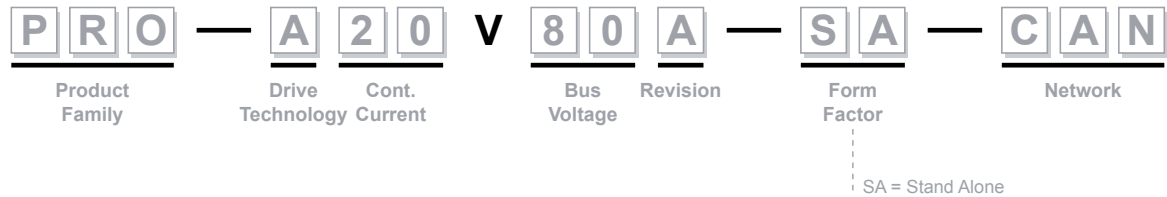


| Electrical Specifications | | | | | |
|---|--|------------------|------|-------|-----------------|
| Maximum DC Supply Voltage | Motor | 80 | | | volt |
| | Logic | 36 | | | volt |
| Maximum continuous current | Peak of sine | 10 | | | amp |
| | RMS | 7.07 | | | amp |
| Peak current (2.4 sec. max.) | Peak of sine | 20 | | | amp |
| | RMS | 7.1 | | | amp |
| Nominal switching frequency | | 14.1 | | | 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 ≤ 10ms) | -1 | | +45 | V |
| Supply Current | +V _{LOG} = 7V | | 300 | | mA |
| | +V _{LOG} = 12V | | 250 | | |
| | +V _{LOG} = 24V | | 150 | | |
| | +V _{LOG} = 40V | | 100 | | |
| Motor Supply Input (+V _{MOT}) | | Min. | Typ. | Max. | Units |
| Supply Voltage | Nominal values | 12 | 80 | 90 | V _{DC} |
| | Absolute maximum values, drive operating but outside guaranteed parameters | 11 | | 95 | V _{DC} |
| | Absolute maximum values, continuous | -0.6 | | 94 | V _{DC} |
| | Absolute maximum values, surge (duration ≤ 10ms) | -1 | | 95 | V |
| Supply Current | Idle | | 1 | 5 | mA |
| | Operating | -40 | ±10 | +20 | A |
| | Absolute maximum value, short-circuit condition (duration ≤ 10ms) | | | 22.5 | A |
| Output | | | | | |
| Motor Outputs (A/A+, B/A-, C/B+, BR/B-) | | Min. | Typ. | Max. | Units |
| Nominal output current, continuous | DC brushed, steppers and BLDC motors with Hall-based trapezoidal control | | | 10 | A |
| | Brushless motors with sinusoidal control (Peak of Sine Value) | | | 10 | |
| | Brushless motors with sinusoidal control (sinusoidal effective RMS value) | | | 7.07 | |
| Motor output current, peak | Maximum 10s (3.6s) | -20 | | +20 | A |
| Short-circuit protection threshold | Measurement range | | | ±22.5 | A |
| Short-circuit protection delay | | 5 | 10 | | µS |
| On-state voltage drop | Nominal output current; including typical mating connector contact resistance | | ±0.3 | ±0.5 | V |
| Off-state leakage current | | | ±0.5 | ±1 | mA |
| Motor inductance (phase to phase) | Recommended value, for current ripple max. ±5% of full range; +V _{MOT} = 36 V | F _{PWM} | | | µH |
| | | 20 kHz | 330 | | |
| | | 40 kHz | 150 | | |
| | | 60 kHz | 120 | | |

PRO-A20V80: PRO Series | Programmable Servo Drive



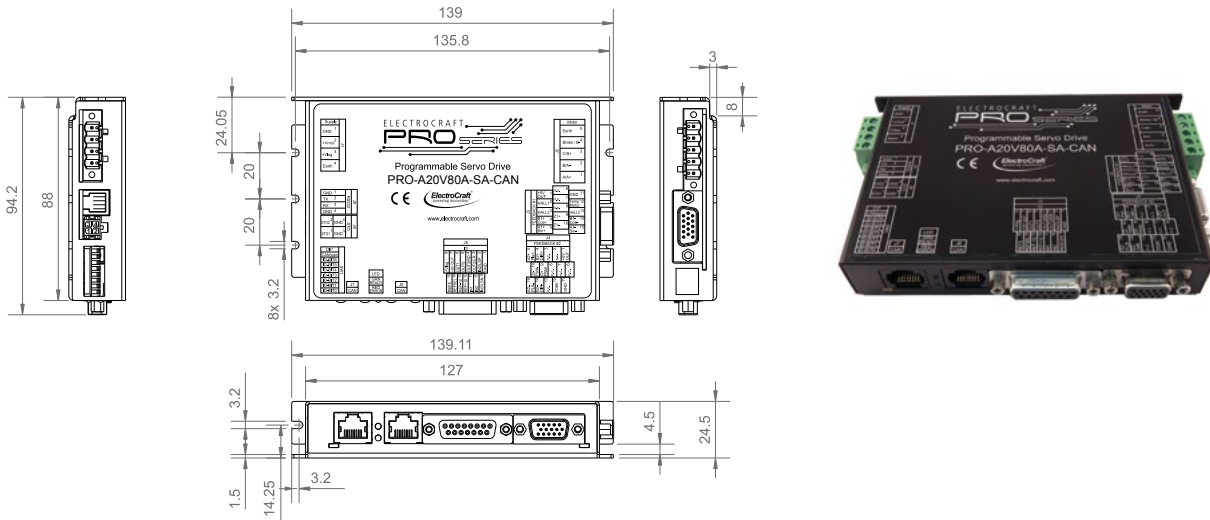
Drive Model Example



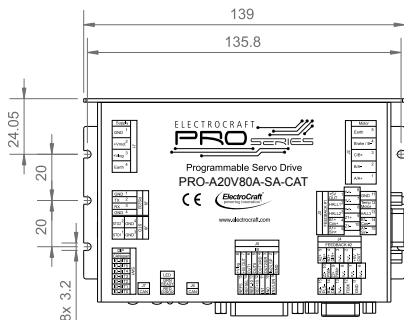
Outline Drawing

| Model | A | B | C | Weight oz (g) |
|--------------------|----------------|---------------|----------------|---------------|
| | Length in (mm) | Width in (mm) | Height in (mm) | |
| PRO-A10V80A-SA-CAN | 5.47 (139) | 3.7 (94.2) | 0.96 (24.5) | 8.5 (240) |

PRO-A20V80A-SA-CAN



PRO-A20V80A-SA-CAT



| Electrical Specifications | | | | | |
|---|--|------------------|------|------|-----------------|
| Maximum DC Supply Voltage | Motor | 80 | volt | | |
| | Logic | 36 | volt | | |
| Maximum continuous current | Peak of sine | 20 | amp | | |
| | RMS | 14.1 | amp | | |
| Peak current (2.4 sec. max.) | Peak of sine | 40 | amp | | |
| | RMS | 7.1 | amp | | |
| Nominal switching frequency | | 28.2 | 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 ≤ 10ms) | -1 | | +45 | V |
| Supply Current | +V _{LOG} = 7V | | 300 | | mA |
| | +V _{LOG} = 12V | | 250 | | |
| | +V _{LOG} = 24V | | 150 | | |
| | +V _{LOG} = 40V | | 100 | | |
| Motor Supply Input (+V _{MOT}) | | Min. | Typ. | Max. | Units |
| Supply Voltage | Nominal values | 12 | 80 | 90 | V _{DC} |
| | Absolute maximum values, drive operating but outside guaranteed parameters | 11 | | 95 | V _{DC} |
| | Absolute maximum values, continuous | -0.6 | | 94 | V _{DC} |
| | Absolute maximum values, surge (duration ≤ 10ms) | -1 | | 95 | V |
| Supply Current | Idle | | 1 | 5 | mA |
| | Operating | -40 | ±20 | +40 | A |
| | Absolute maximum value, short-circuit condition (duration ≤ 10ms) | | | 45 | A |
| Output | | | | | |
| Motor Outputs (A/A+, B/A-, C/B+, BR/B-) | | Min. | Typ. | Max. | Units |
| Nominal output current, continuous | DC brushed, steppers and BLDC motors with Hall-based trapezoidal control | | | 20 | A |
| | Brushless motors with sinusoidal control (Peak of Sine Value) | | | 20 | |
| | Brushless motors with sinusoidal control (sinusoidal effective RMS value) | | | 14.2 | |
| Motor output current, peak | Maximum 10s (3.6s) | -40 | | +40 | A |
| Short-circuit protection threshold | Measurement range | | | ±45 | A |
| Short-circuit protection delay | | 5 | 10 | | µS |
| On-state voltage drop | Nominal output current; including typical mating connector contact resistance | | ±0.3 | ±0.5 | V |
| Off-state leakage current | | | ±0.5 | ±1 | mA |
| Motor inductance (phase to phase) | Recommended value, for current ripple max. ±5% of full range; +V _{MOT} = 36 V | F _{PWM} | | | µH |
| | | 20 kHz | 330 | | |
| | | 40 kHz | 150 | | |
| | | 60 kHz | 120 | | |

Build Your Own ElectroCraft Motor

To Fit Your Exact Application

For the past 60 years, the global team at ElectroCraft has helped engineers like you translate innovative ideas into reality. To build on that legacy, we created this Build-Your-Own ElectroCraft Motor web tool to get you started with our technology.

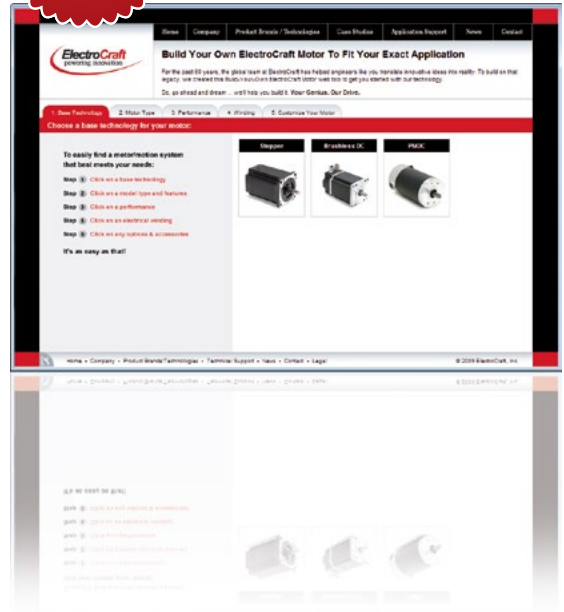
GO FIGURE.

Customize your options ...

- Step 1:** Select a base technology
- Step 2:** Select a model type & features
- Step 3:** Select a performance
- Step 4:** Select an electrical winding
- Step 5:** Select any options & accessories



Easily build your own motor at www.configureamotor.com



System Matrix - Matching Motor and Drive Combinations

| Motor Series | | | PMDC Drive Models | | | | | | | | | | | | |
|--------------------------|------------|-------------|-------------------|--------|--------|--------------|--------------|--------------|--------------|--------------|--------------|------------|------------|------------|------------|
| | Motor P/N | | 4 Quadrant | | | | | | | | Pro Series | | | | |
| | Imperial | Metric | DA4303 | DA4709 | DA4718 | SCA-LE-30-03 | SCA-LS-30-03 | SCA-SE-30-06 | SCA-SS-30-06 | SCA-SS-70-10 | SCA-SS-70-30 | PRO-A04V36 | PRO-A08V48 | PRO-A10V80 | PRO-A20V80 |
| 'DirectPower - DP | DP20-10V12 | DP20M-07V12 | | ● | | | | ● | ● | ● | | | ○ | ○ | |
| | DP20-10V24 | DP20M-07V24 | ● | | | ● | ● | ● | ● | ● | | ○ | | ○ | |
| | DP20-15V12 | DP20M-11V12 | | ● | | | | ● | ● | ● | | | ○ | ○ | |
| | DP20-15V24 | DP20M-11V24 | ● | | | ● | ● | ● | ● | ● | | ○ | | ○ | |
| | DP20-20V12 | DP20M-14V12 | | ● | | | | ● | ● | ● | | | | ○ | |
| | DP20-20V24 | DP20M-14V24 | ● | | | ● | ● | ● | ● | ● | | ○ | | ○ | |
| | DP25-30V12 | DP25M-21V12 | | | ● | | | | | | ● | | | | ○ |
| | DP25-30V24 | DP25M-21V24 | | ● | | | | | ● | ● | ● | | ○ | ○ | |
| | DP25-35V12 | DP25M-25V12 | | | | | | | ● | ● | ● | | | | ○ |
| | DP25-35V24 | DP25M-25V24 | | | ● | | | | ● | ● | ● | | ○ | ○ | |
| | DP25-45V12 | DP25M-32V12 | | | ● | | | | | | ● | | | | ○ |
| | DP25-45V24 | DP25M-32V24 | | ● | | | | | ● | ● | ● | | ○ | ○ | |
| | DP30-60V12 | N/A | | | ● | | | | | | ● | | | | ○ |
| | DP30-60V24 | N/A | | ● | | | | | ● | ● | ● | | ○ | ○ | |
| | DP30-75V12 | N/A | | ● | | | | | ● | ● | ● | | ○ | ○ | |
| | DP30-75V24 | N/A | | ● | | | | | ● | ● | ● | | ○ | ○ | |
| DP30-85V12 | N/A | | ● | | | | | ● | ● | ● | | ○ | ○ | | |
| DP30-85V24 | N/A | | ● | | | | | ● | ● | ● | ○ | | ○ | | |

System Matrix - Matching Motor and Drive Combinations

| Motor Series | | PMDC Drive Models | | | | | | | | | | | | |
|------------------|-------------------|-------------------|--------|--------|--------------|--------------|--------------|--------------|--------------|---------------|------------|------------|------------|------------|
| Motor P/N | | 4 Quadrant | | | | | | | | | Pro Series | | | |
| Imperial | Metric | DA4303 | DA4709 | DA4718 | SCA-LE-30-03 | SCA-LS-30-03 | SCA-SE-30-06 | SCA-SS-30-06 | SCA-SS-70-10 | SCA-SS-70-30} | PRO-A04V36 | PRO-A08V48 | PRO-A10V80 | PRO-A20V80 |
| DPP240(T)-29V48 | DPP240M(T)-20V48 | | ● | | | | | | ● | | | ● | | |
| DPP240(T)-29V60 | DPP240M(T)-20V60 | | ● | | | | | | ● | | | | ● | |
| DPP242(T)-44V48 | DPP242M(T)-31V48 | | | ● | | | | | | ● | | | | ● |
| DPP242(T)-44V60 | DPP242M(T)-31V60 | | | ● | | | | | | ● | | | | ● |
| DPP243(T)-52V48 | DPP243M(T)-36V48 | | | ● | | | | | | ● | | | | ● |
| DPP243(T)-52V60 | DPP243M(T)-36V60 | | | ● | | | | | | ● | | | | ● |
| DPP642(T)-100V48 | DPP642M(T)-70V48 | | | ● | | | | | | ● | | | | ● |
| DPP642(T)-100V60 | DPP642M(T)-70V60 | | | ● | | | | | | ● | | | | ● |
| DPP643(T)-165V48 | DPP643M(T)-116V48 | | | ● | | | | | | ● | | | | ● |
| DPP643(T)-165V60 | DPP643M(T)-116V60 | | | ● | | | | | | ● | | | | ● |
| DPP644(T)-210V48 | DPP644M(T)-148V48 | | | ● | | | | | | ● | | | | ● |
| DPP644(T)-210V60 | DPP644M(T)-148V60 | | | ● | | | | | | ● | | | | ● |
| DPP681(T)-90V24 | DPP681M(T)-64V24 | | | | | | | | | ● | | | | ○ |
| DPP681(T)-90V48 | DPP681M(T)-64V48 | | | ● | | | | | | ● | | | | ● |
| DPP681(T)-90V60 | DPP681M(T)-64V60 | | | ● | | | | | | ● | | | | ● |
| DPP683(T)-120V24 | DPP683M(T)-85V24 | | | | | | | | | ● | | | | ○ |
| DPP683(T)-120V48 | DPP683M(T)-85V48 | | | | | | | | | ● | | | | ○ |
| DPP683(T)-120V60 | DPP683M(T)-85V60 | | | | | | | | | ● | | | | ● |
| DPP685(T)-185V24 | DPP685M(T)-130V24 | | | | | | | | | ● | | | | ○ |
| DPP685(T)-185V48 | DPP685M(T)-130V48 | | | | | | | | | ● | | | | ○ |
| DPP685(T)-185V60 | DPP685M(T)-130V60 | | | | | | | | | ● | | | | ○ |
| DPP689(T)-200V24 | DPP689M(T)-141V24 | | | | | | | | | ● | | | | ○ |
| DPP689(T)-200V48 | DPP689M(T)-141V48 | | | | | | | | | ● | | | | ○ |
| DPP689(T)-200V60 | DPP689M(T)-141V60 | | | | | | | | | ● | | | | ○ |
| DPP701-150V24 | DPP701M-106V24 | | | | | | | | | ○ | | | | ○ |
| DPP701-150V48 | DPP701M-106V48 | | | ● | | | | | | ● | | | | ● |
| DPP701-150V60 | DPP701M-106V60 | | | ● | | | | | | ● | | | | ● |
| DPP701-150V90* | DPP701M-106V90* | | | | | | | | | | | | | |
| DPP702-300V24 | DPP702M-212V24 | | | | | | | | | ○ | | | | |
| DPP702-300V48 | DPP702M-212V48 | | | | | | | | | ● | | | | ○ |
| DPP702-300V60 | DPP702M-212V60 | | | | | | | | | ● | | | | ○ |
| DPP702-300V90* | DPP702M-212V90* | | | | | | | | | | | | | |
| DPP703-410V24 | DPP703M-290V24 | | | | | | | | | ○ | | | | |
| DPP703-410V48 | DPP703M-290V48 | | | | | | | | | ● | | | | ○ |
| DPP703-410V60 | DPP703M-290V60 | | | | | | | | | ● | | | | ○ |
| DPP703-410V90* | DPP703M-290V90* | | | | | | | | | | | | | |
| DPP726T-355V60 | DPP726MT-251V60 | | | | | | | | | ● | | | | ○ |
| DPP726T-355V90* | DPP726MT-251V90* | | | | | | | | | | | | | |
| DPP726T-355V120* | DPP726MT-251V120* | | | | | | | | | | | | | |
| DPP727T-455V60 | DPP727MT-321V60 | | | | | | | | | ● | | | | ○ |
| DPP727T-455V90* | DPP727MT-321V90* | | | | | | | | | | | | | |
| DPP727T-455V120* | DPP727MT-321V120* | | | | | | | | | | | | | |
| DPP728T-570V60 | DPP728MT-403V60 | | | | | | | | | ● | | | | ○ |
| DPP728T-570V90* | DPP728MT-403V90* | | | | | | | | | | | | | |
| DPP728T-570V120* | DPP728MT-403V120* | | | | | | | | | | | | | |

DirectPower Plus - DDP

● Recommended.
 ○ Using this combination may limit Peak Torque.
 * Motor windings are optimized for a higher voltage or current than the ElectroCraft drive offering



Other Products available from ElectroCraft:

- CompletePower™ I Motion Control
- RapidPower™ I BLDC
- AxialPower™ I Linear Actuator
- MobilePower™ I Transmissions
- SolidPower™ Plus I Housed AC
- SurePower™ I C-Frame AC
- PRO Series I Motion Control



CompletePower™ I 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.

TorquePower™ I 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.

PRO Series I 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.

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.

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.

Integrated Motor Drive Controllers

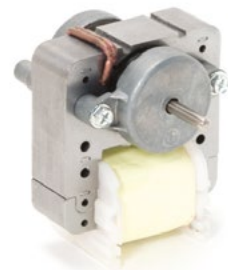
A new range of intelligent stepper motors, brushless servo motors and linear actuators, all with fully-integrated drives, motion controller and optional position feedback. Supplied complete with MotionPRO configuration software.

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.

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.

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.

To build your own motor, choose the:

1 - Frame Size
(Imperial or Metric)

2 - Torque

3 - Winding

4 - Features

a. **D P P** **2 4 0** **T** - **2 9** **V** **4 8** - **1 0 2** - **C**
 Product Name Frame Size Optional Tachometer Continuous Torque (oz·in) Voltage Rear Shaft Front Shaft Lead Option Encoder

b. **D P P** **2 4 0 M** **T** - **2 0** **V** **4 8** - **1 0 2** - **C**
 Product Name Frame Size Optional Metric Optional Tachometer Continuous Torque (Ncm) Voltage Rear Shaft Front Shaft Lead Option Encoder

Step 4: PMDC Motor Features

| Rear Shaft | Front Shaft | Lead Option | Encoder Options (X = none) |
|---|---|---|----------------------------|
| | | | Differential Encoder |
| 0 = no | 0 = round | 0 = flying leads | C = 500 Line |
| 1 = yes | 1 = standard flat | 1 = standard connector | D = 1000 Line |
| Rear shaft required for all encoder models. | 2 = key seat Available on shaft diameters 0.3150 inches (8mm) and larger | Mating Connection: Connector: Molex 50-84-2022 Molex 02-08-1002 (loose) | |
| | | 2 = flying cable Required for CE recognized models | |

Encoder Details (available on DPP Series only)

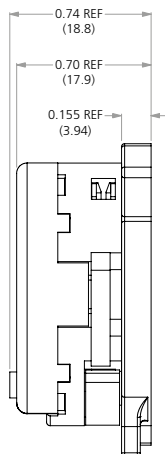
Encoder Specifications for Differential Encoder





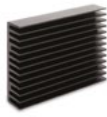








Encoder Signals

| | | | | | | | |
|-----|--------|-------|-------|-------|-------|-------|-------|
| GND | +5 VDC | CH A+ | CH A- | CH B+ | CH B- | CH Z+ | CH Z- |
|-----|--------|-------|-------|-------|-------|-------|-------|

Lead-Wire Colors

| | | | | | | | |
|-----|-----|-----|---------|-----|---------|-----|---------|
| BLK | RED | YEL | YEL/WHT | BLU | BLU/WHT | ORG | ORG/WHT |
|-----|-----|-----|---------|-----|---------|-----|---------|



| Drive Accessories | | | | | |
|---|---|--------|---|---|--------|
| Patch Cable | | | | | |
|  | P/N | 50cm | 100cm | 200cm | 300cm |
| | Red | CA2005 | CA2010 | CA2020 | CA2030 |
| | Yellow | CA4005 | CA4010 | CA4020 | CA4030 |
| | Gray | CA8005 | CA8010 | CA8020 | CA8030 |
| Aluminium Din Rail kit | | | Braking module | | |
|  | Aluminium Din Rail kit with L-shaped bracket for units: SCA-Lx / SCA-Sx (not used for SCA-SS-70-30) | |  | Braking module in a rugged aluminium case. | |
| | P/N ASX-RM-01-01 | | | P/N ASO-BM-70-30 | |
| Passive heatsink | | | Passive heatsink | | |
|  | Passive heatsink optimized for drives: DA43 | |  | Passive heatsink optimized for drives: DA47 | |
| | P/N HA2008 | | | P/N HA3008 | |
| fanned heatsink | | | fanned heatsink | | |
|  | One fan heatsink optimized for drives (fan is 1 x 24 VDC, .8 W): DA43 | |  | One fan heatsink optimized for drives (fan is 1 x 24 VDC, .8 W): DA47 | |
| | P/N HA2018 | | | P/N HA3018 | |
| fanned heatsink | | | fanned heatsink | | |
|  | Two fan heatsink optimized for drives (fans are 2 x 24 VDC, .8 W): DA43 | |  | Two fan heatsink optimized for drives (fans are 2 x 24 VDC, .8 W): DA47 | |
| | P/N HA2028 | | | P/N HA3028 | |
| Choke module | | | DIN Rail mounting kit | | |
|  | Choke module optimized for brushless drives. Inductance: IA2100 = 2x50 µH; IA2101 = 2x100 µH Nominal current: 10 A | |  | DIN Rail mounting kit for units: DA43 / DA47 | |
| | P/N IA210x | | | P/N MA0025 | |
| Break Out Board | | | DIN Rail mounting kit | | |
|  | Break Out Board for: for DA-Series | |  | DIN Rail mounting kit for: ASO-BM-70-30 | |
| | P/N WA2509 | | | P/N MA3050 | |



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