ElectroCraft®
powering innovation™

Catalog DC05EN

Permanent Magnet DC

Motors

- DirectPower Series
- DirectPower Plus Series

Drives

- DA-Series
- SC-Series
- PRO Series

www.electrocraft.com

ElectroCraft®
powering innovation™

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.

Designed by stilbruch · www.stilbruch.me

Table of Contents

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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.

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

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.

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.

ElectroCraft®
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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

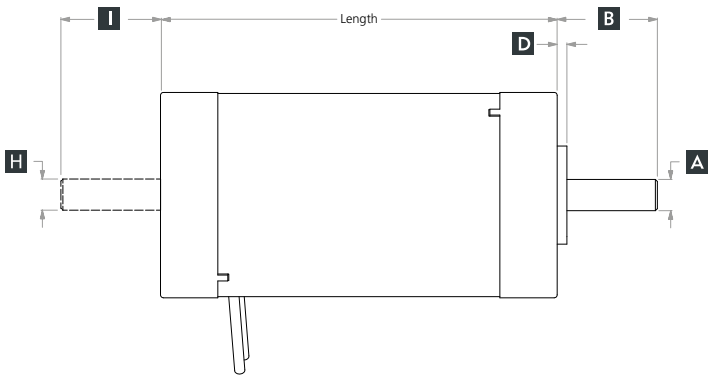
- DP: Product Name
- 20: Frame Size
- 10: Continuous Torque (oz-in)
- V: Winding
- 12: Voltage
- 000: Rear Shaft, Front Shaft, Lead Option
- X: Encoder

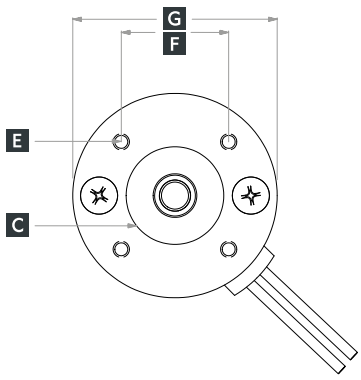
b. DP20M — 07 V 12 — 000 — X

- DP: Product Name
- 20: Frame Size
- M: Optional Metric
- 07: Continuous Torque (Ncm)
- V: Winding
- 12: Voltage
- 000: Rear Shaft, Front Shaft, Lead Option
- X: Encoder

Step 1: DP20 & DP20M Frame Size Drawing Key

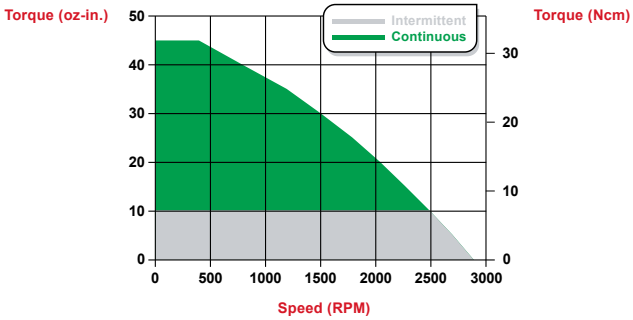
Model	MAX Length	A Front Shaft Diameter	B Front Shaft Length	C Pilot Diameter	D Pilot Length (Ref)	E Mounting Hole Pattern (Ref)	F Mount Hole Spacing (Ref)	G Flange External Dimension (Ref)	H Rear Shaft Diameter	I Rear Shaft Length	J Encoder Length Single Ended / Differential
DP20-10	4.010 in	0.3124 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										



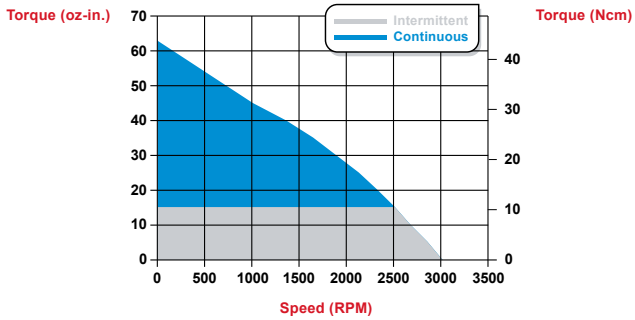


Step 2: DP20 Torque and Mechanical Data

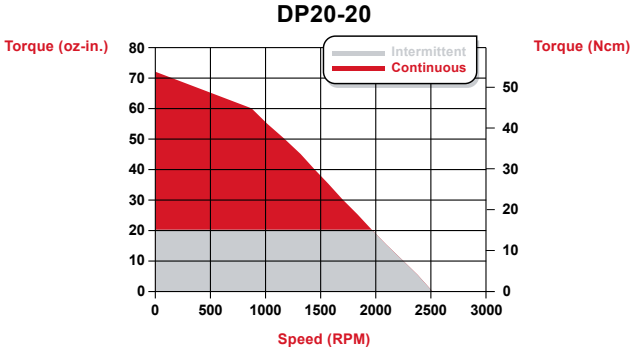
DP20-10



DP20-15



DP20-20



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

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 — 30 V 12 — 000 — X

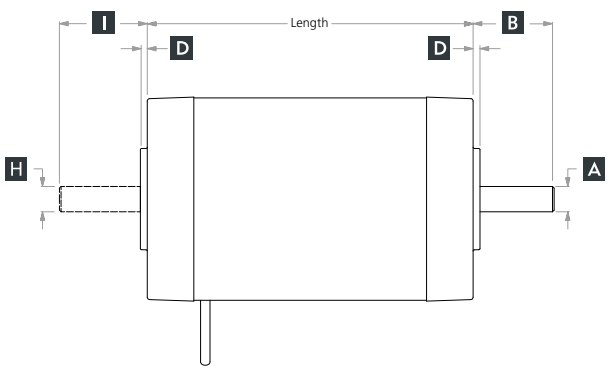
- DP: Product Name
- 25: Frame Size
- 30: Continuous Torque (oz-in)
- V: Winding
- 12: Voltage
- 000: Rear Shaft / Front Shaft / Lead Option
- X: Encoder

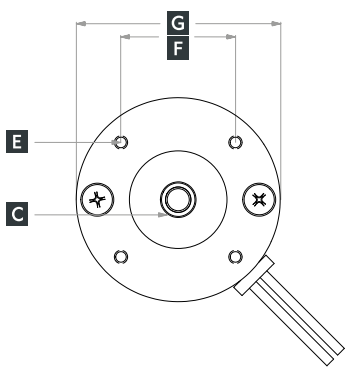
b. DP25M — 21 V 12 — 000 — X

- DP: Product Name
- 25: Frame Size
- M: Optional Metric
- 21: Continuous Torque (Ncm)
- V: Winding
- 12: Voltage
- 000: Rear Shaft / Front Shaft / Lead Option
- X: Encoder

Step 1: DP25 & DP25M Frame Size Drawing Key

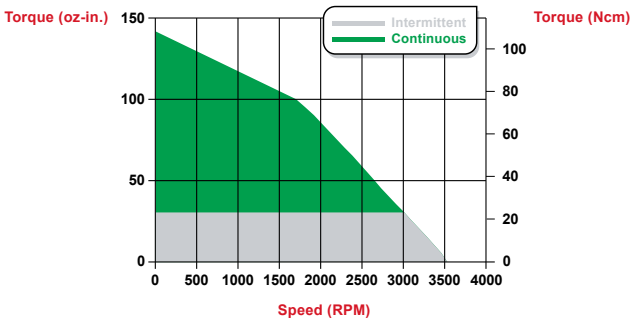
Model	MAX Length	A Front Shaft Diameter	B Front Shaft Length	C Pilot Diameter	D Pilot Length (Ref)	E Mounting Hole Pattern (Ref)	F Mount Hole Spacing (Ref)	G Flange External Dimension (Ref)	H Rear Shaft Diameter	I Rear Shaft Length	J Encoder Length Single Ended / Differential
DP25-30	4.055 in	0.3124 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										



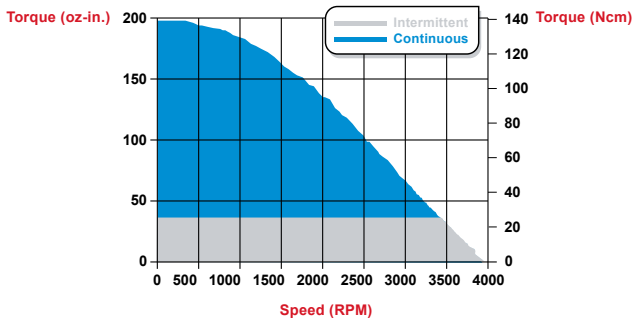


Step 2: DP25 Torque and Mechanical Data

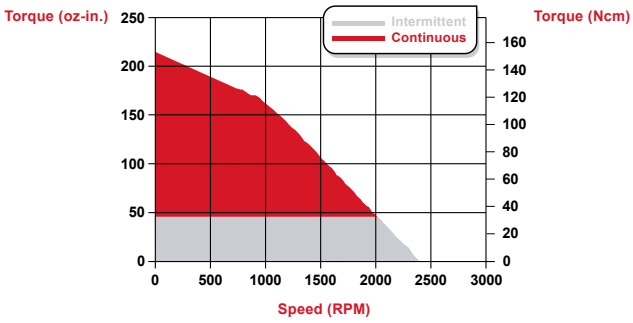
DP25-30



DP25-35



DP25-45



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

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:

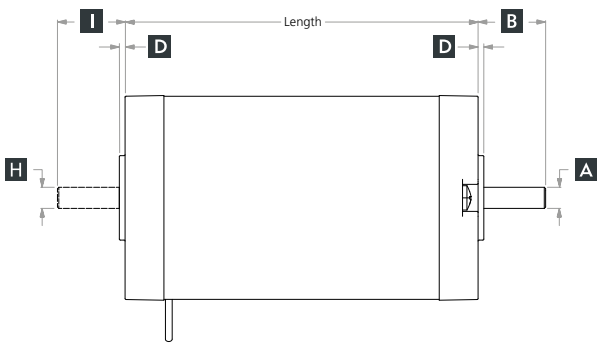
1 - Frame Size (Imperial or Metric)
2 - Torque
3 - Winding
4 - Features (see page 39)

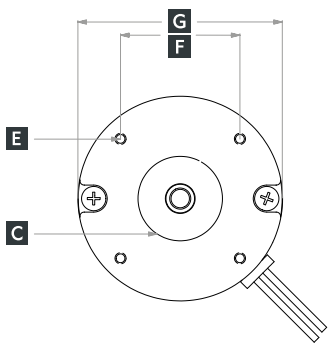
a. DP30 — 60 — V12 — 000 — X

DP	30	60	V	12	000	X
Product Name	Frame Size	Continuous Torque (oz-in)		Voltage	Rear Shaft / Front Shaft / Lead Option	Encoder

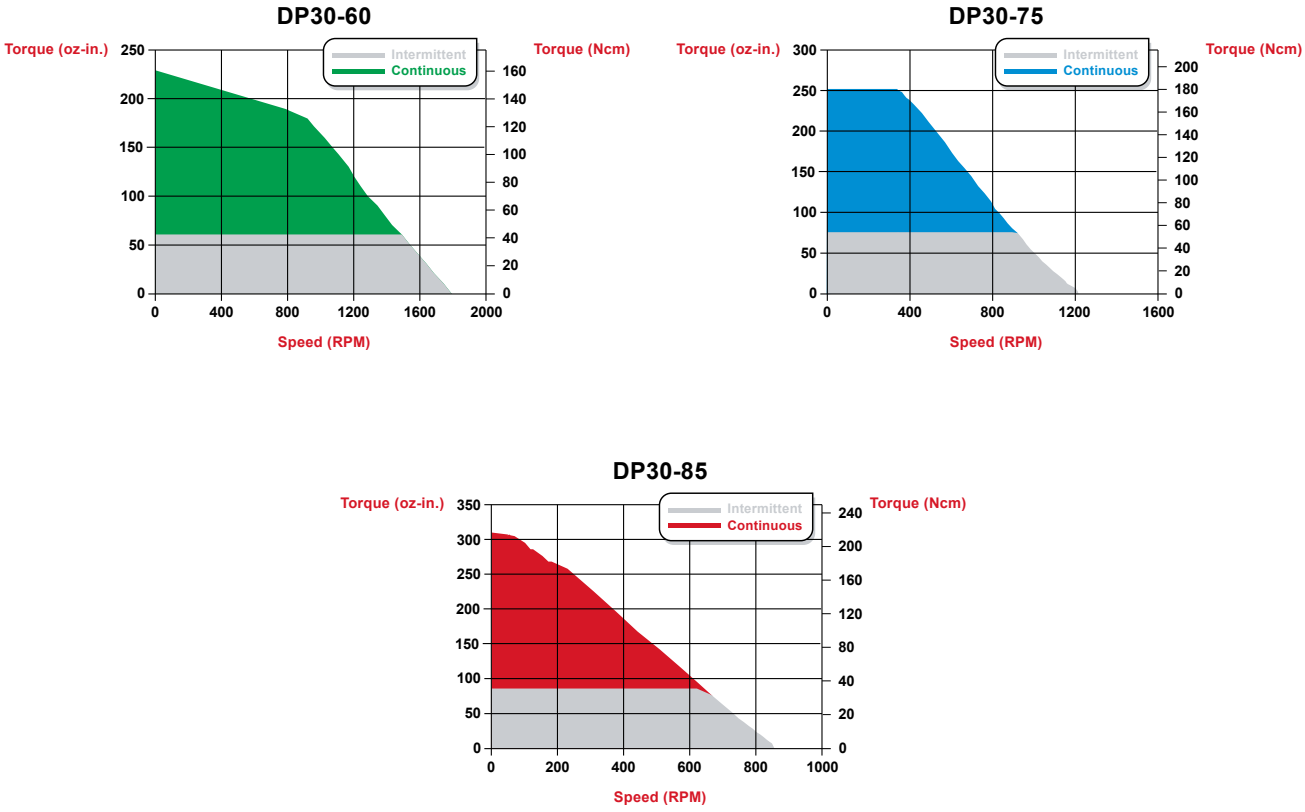
Step 1: DP30 & DP30M Frame Size Drawing Key

Model	MAX Length	A 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 Single Ended / Differential
DP30-60	5.265 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
DP30-75	5.986 in										
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)

a. D P P 2 4 0 — T — 2 9 V 4 8 – 1 0 2 – C

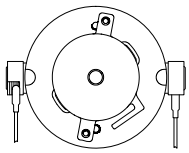
Product Name | Frame Size | Optional Tachometer | Continuous Torque (oz-in) | Voltage | Rear Shaft | Front Shaft | Lead Option | Encoder

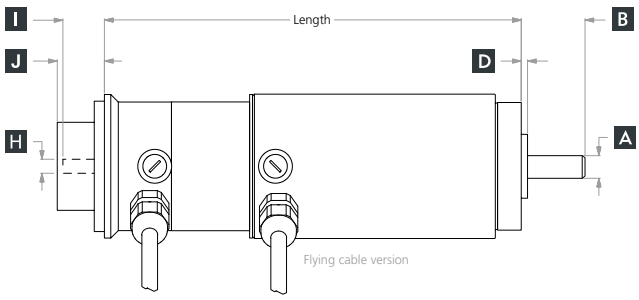
b. D P P 2 4 0 M — T — 2 0 V 4 8 – 1 0 2 – C

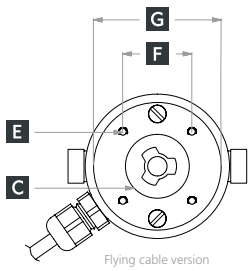
Product Name | Frame Size | Optional Metric | Optional Tachometer | Continuous Torque (Ncm) | Voltage | Rear Shaft | Front Shaft | Lead Option | Encoder

Step 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							6.00 mm 5.99 mm (motor-tach)		



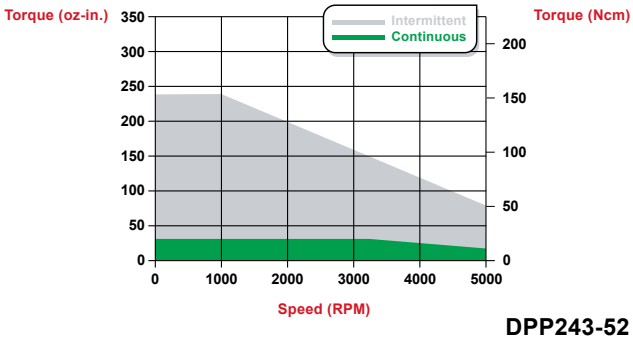




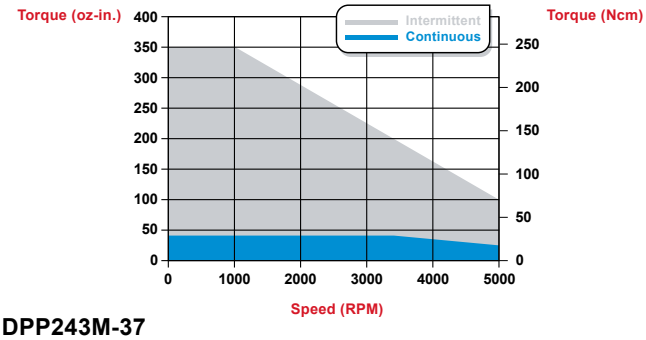
Other mounting options available upon request.

Step 2: DPP240 Torque and Mechanical Data

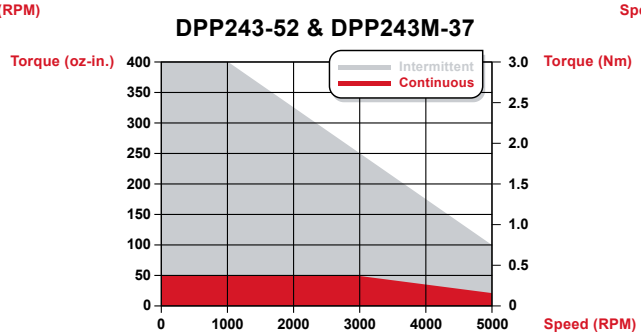
DPP240-29 & DPP240M-20



DPP242-44 & DPP242M-31



DPP243-52 & DPP243M-37



Continuous torque ratings developed with 6" x 6" x 0.25" heat sink at an ambient temperature of 40 degrees C.

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-sec² (g-cm²)	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

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-sec² (g-cm²)
DPP240 Series	14.0	600-800	5%	0.0014 (98.86)

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. DPP 642 T – 100 V 60 – 1 2 2 – C

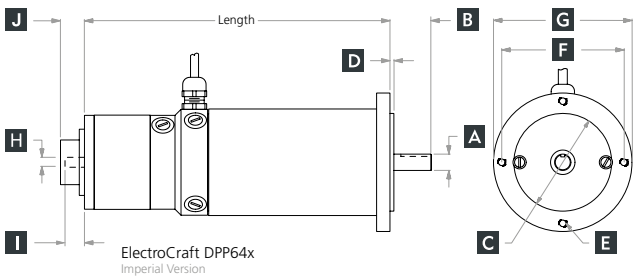
Product Name | Frame Size | Optional Tachometer | Continuous Torque (oz-in) | Voltage | Rear Shaft | Front Shaft | Lead Option | Encoder

b. DPP 642M T – 70 V 60 – 1 2 2 – C

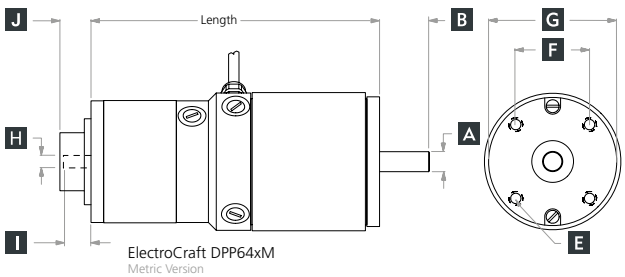
Product Name | Frame Size | Optional Metric | Optional Tachometer | Continuous Torque (Ncm) | Voltage | Rear Shaft | Front Shaft | Lead Option | Encoder

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										



ElectroCraft DPP64x
Imperial Version

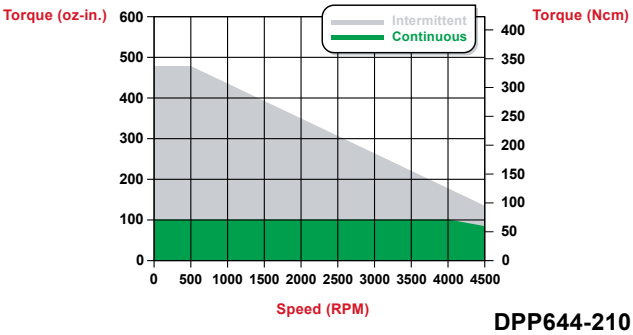


ElectroCraft DPP64xM
Metric Version

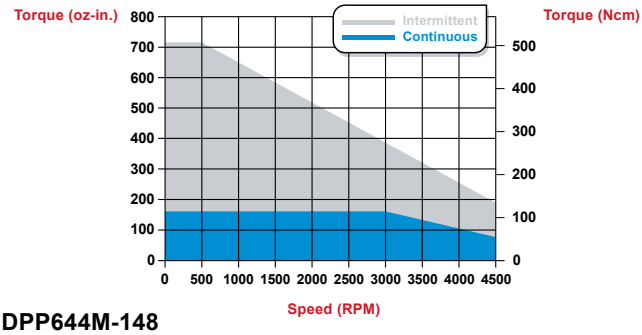
Other mounting options available upon request.

Step 2: DPP640 Torque and Mechanical Data

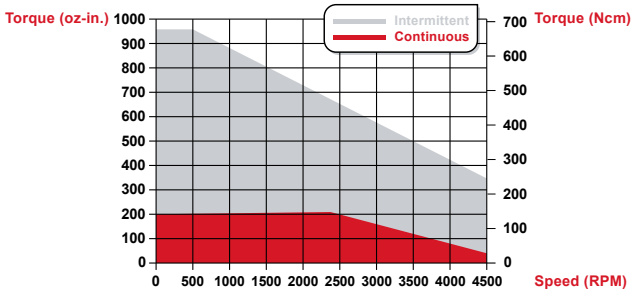
DPP642-100 & DPP642M-70



DPP643-165 & DPP643M-116



DPP644-210 & DPP644M-148



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

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-sec² (g-cm²)	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

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-sec² (g-cm²)
DPP640 Series	14.0	80-120	5%	0.002 (141.23)

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 V 6 0 – 1 2 2 – C

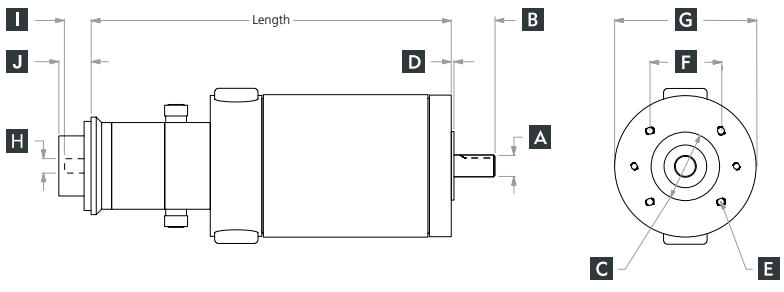
Product Name | Frame Size | Optional Tachometer | Continuous Torque (oz-in) | Voltage | Rear Shaft | Front Shaft | Lead Option | Encoder

b. D P P 6 8 1 M — T — 6 4 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: DPP680 & DPP680M Frame Size Drawing Key

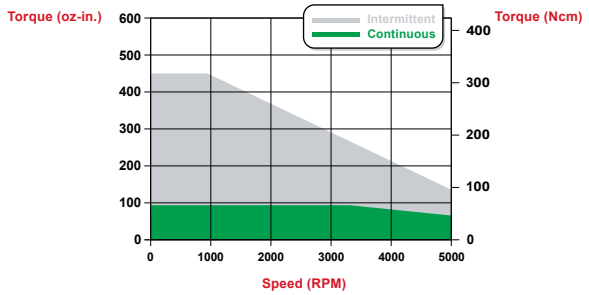
Model	MAX Length	MAX Length (with tachometer)	A Front Shaft Diameter	B Front Shaft Length	C Pilot Diameter	D Pilot Length (Ref)	E Mounting Hole Pattern (Ref)	F Mount Hole Spacing (Ref)	G Flange External Dimension (Ref)	H Rear Shaft Diameter	I Rear Shaft Length	J Encoder Length (Ref)
DPP681	5.10 in	7.81 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) 0.2497 in 0.2494 in (motor-tach)	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) 6.00 mm 5.99 mm (motor-tach)	19 mm ±0.381	18.8 mm
DPP683M	147 mm	214 mm										
DPP685M	175 mm	242 mm										
DPP689M	196 mm	263 mm										



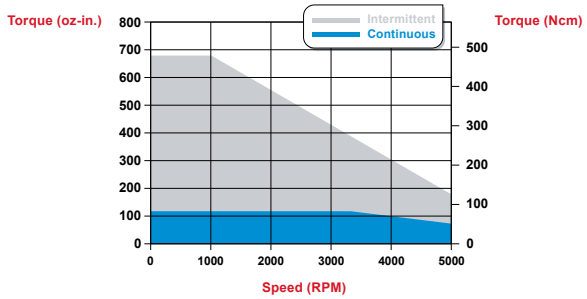
Other mounting options available upon request.

Step 2: DPP680 Torque and Mechanical Data

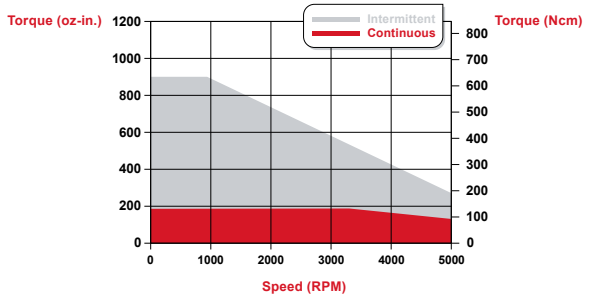
DPP681-90 & DPP681M-64



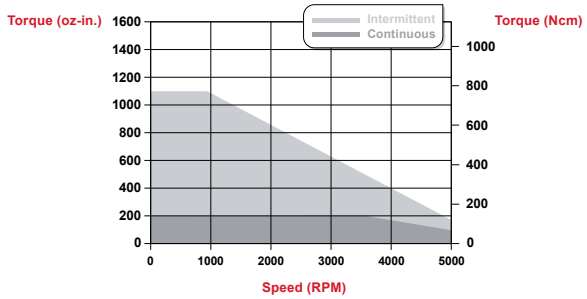
DPP683-120 & DPP683M-85



DPP685-185 & DPP685M-130



DPP689-200 & DPP689M-141



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-sec2 (g-cm2)	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-sec² (g-cm²)
DPP680 Series	14.0	600-900	5%	0.002 (141.23)

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 V 9 0 — 1 2 2 — C

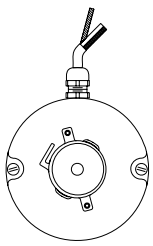
Product Name | Frame Size | Continuous Torque (oz-in) | Voltage | Rear Shaft | Front Shaft | Lead Option | Encoder

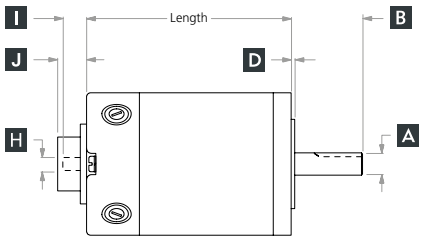
b. D P P 7 0 1 M — 1 0 6

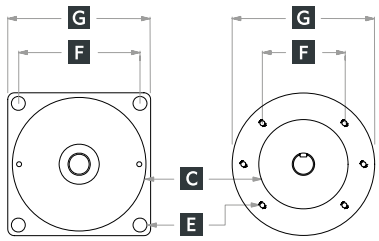
Product Name | Frame Size | Optional Metric | Continuous Torque (Ncm)

Step 1: DPP700 & DPP700M Frame Size Drawing Key

Model	MAX Length	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)
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										





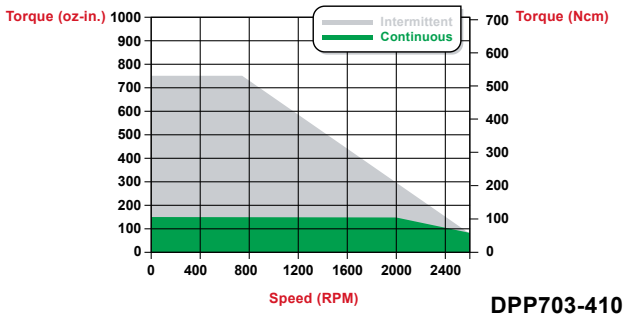


Metric shown above | Imperial shown above

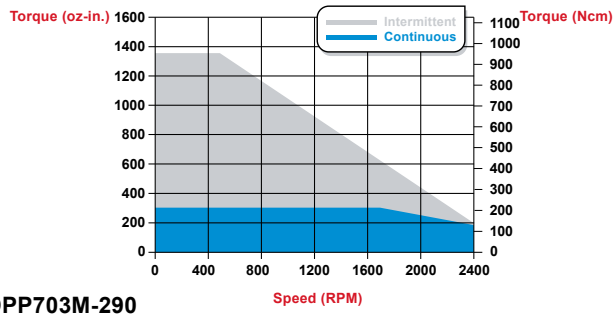
Other mounting options available upon request.

Step 2: DPP700 Torque and Mechanical Data

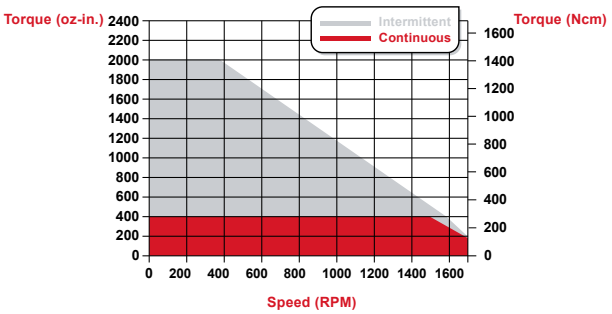
DPP701-150 & DPP701M-106



DPP702-300 & DPP702M-212



DPP703-410 & DPP703M-290



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

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-sec2 (g-cm2)	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 — T — 3 5 5 — V 9 0 — 1 2 2 — C

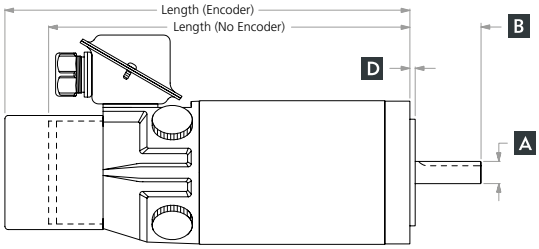
Product Name | Frame Size | Tachometer Standard | Continuous Torque (oz-in) | Voltage | Rear Shaft | Front Shaft | Lead Option | Encoder

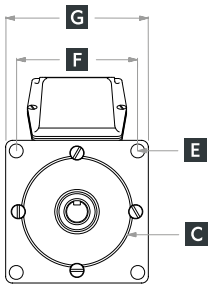
b. D P P 7 2 6 M T — 2 5 1 — V 9 0 — 1 2 2 — C

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

Step 1: DPP720 & DPP720M Frame Size Drawing Key

Model	MAX Length Encoder	MAX Length No Encoder	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)
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										

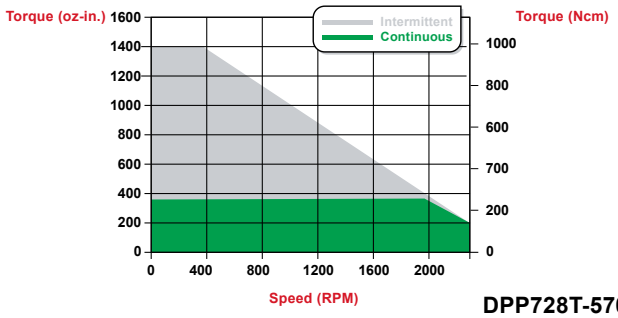




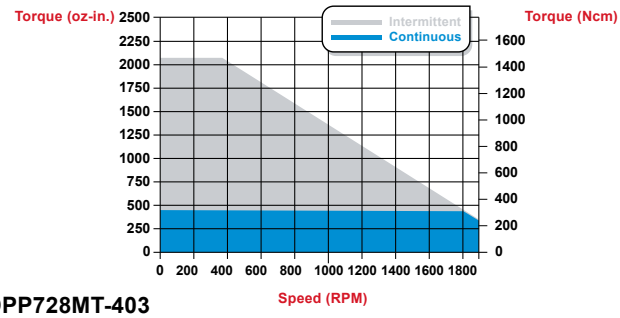
Other mounting options available upon request.

Step 2: DPP720 Torque and Mechanical Data

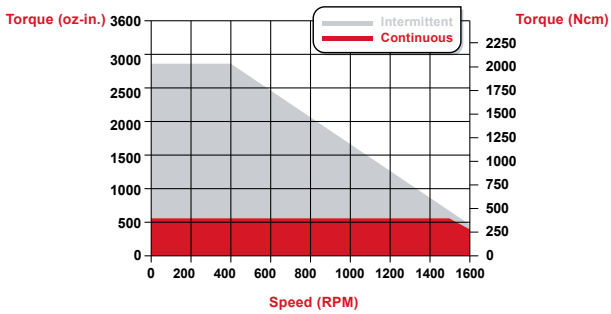
DPP726T-355 & DPP726MT-251



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-sec2 (g-cm2)	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.

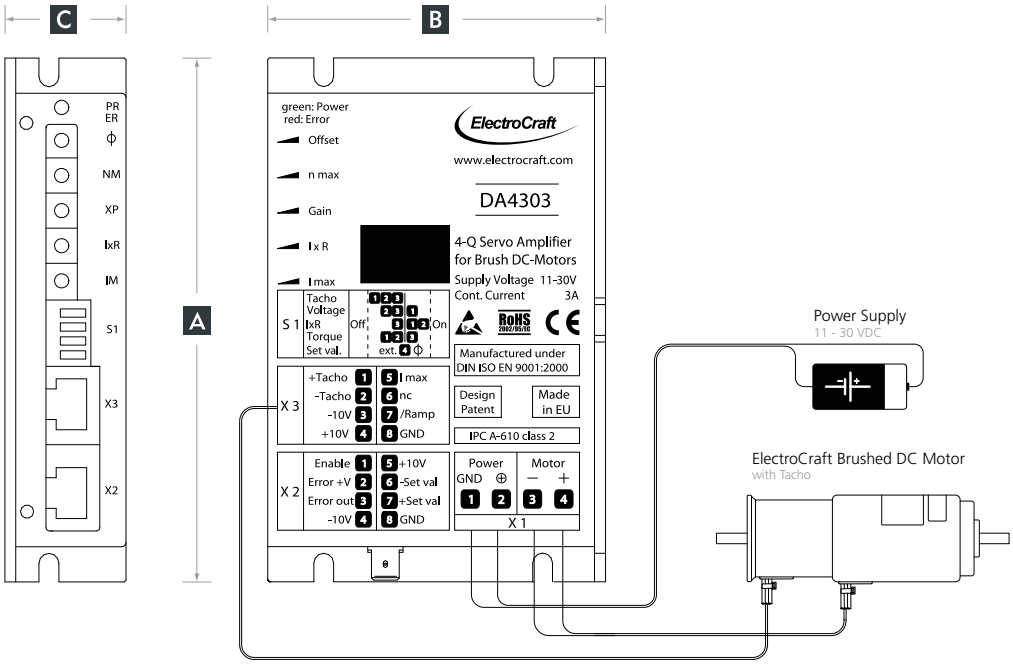
This servo-amplifier is built into a fully enclosed rugged miniature aluminum case. Linear servo amplifiers are ideal for low friction applications requiring high bandwidth, low noise and minimal distortion from the power electronics. The drive can be configured in the following modes of operation with 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
		

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.

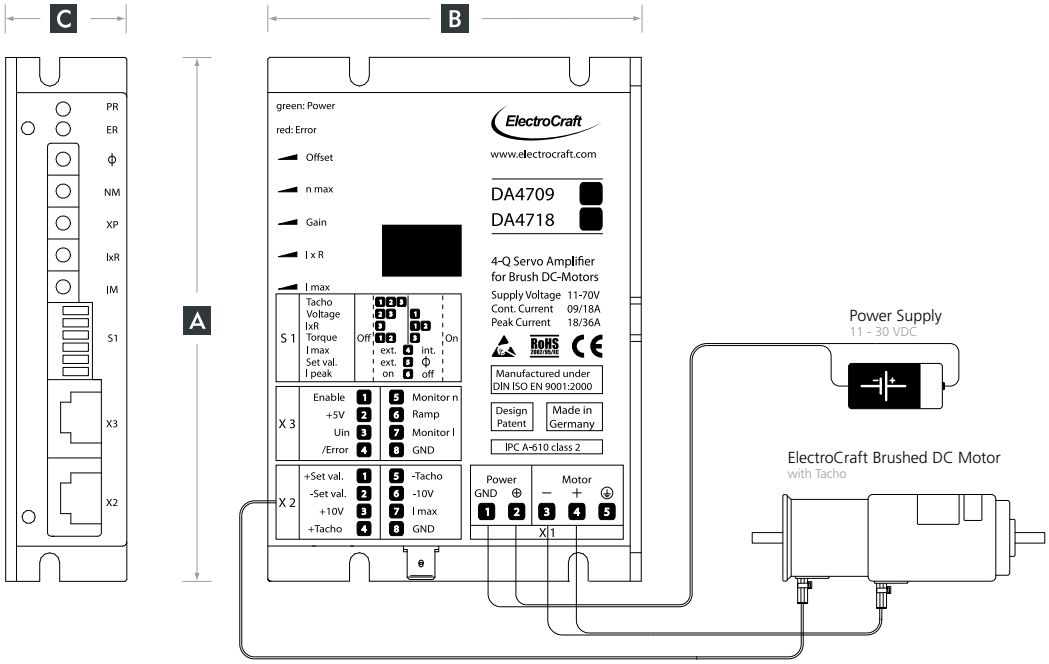
This four-quadrant PWM brush DC servo amplifier is fully enclosed in a small, rugged aluminum case which can be DIN-rail mounted or panel mounted for easy integration. The drive can be configured in the following modes of operation with simple dip switch settings: I/R compensation, Tach mode, Voltage 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

D	A	4	7	09
Drive Technology	Version	# Quadrants	Voltage 10x VDC	Current Amps

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
Imax	0 to +10 VDC; Ri > 100 kOhm

Switches	
Tacho-, Voltage-, IxR-, 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 Vmotor ; 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; 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 DA47 (details see page 48)

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

DA

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.

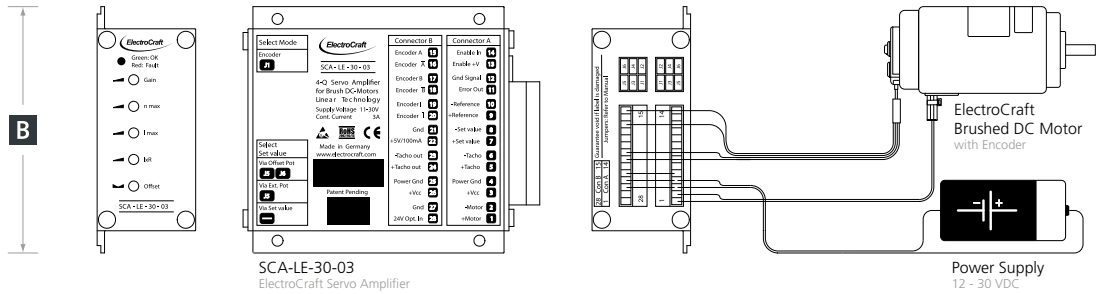
This linear four-quadrant brushless DC servo amplifier is fully enclosed in a rugged aluminum case which can be panel mounted for easy integration. The drive is available in several configurations depending on your control requirements. The drive handles continuous currents up to 3 Amps and is protected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

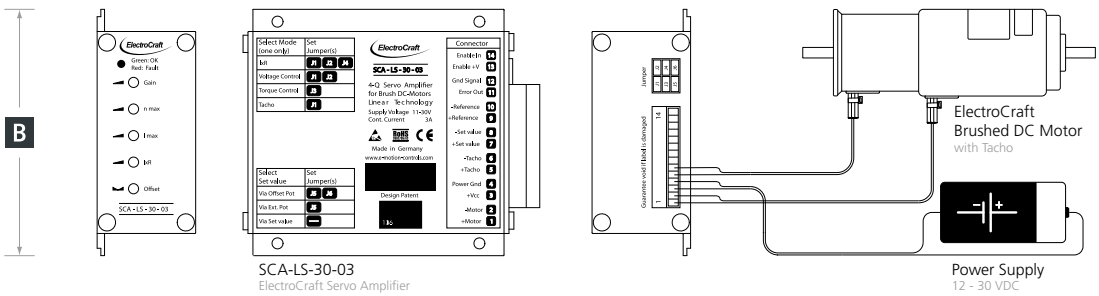
Drive Model Example

SC	A	L	E	30	03
Drive Technology	Case Type	Drive Type	Version	Voltage VDC	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; Imax; IxR; 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	IxR-compensation	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.

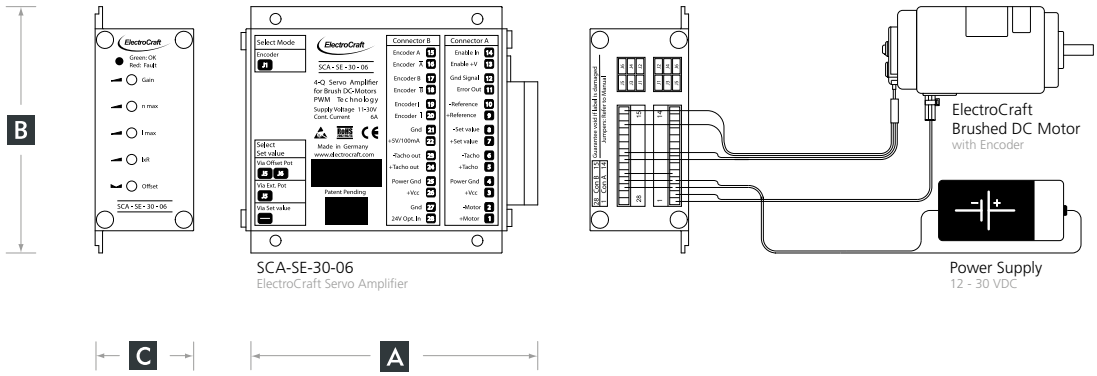
This PWM four-quadrant brushless DC servo amplifier is fully enclosed in a rugged aluminum case which can be panel mounted for easy integration. The drive is available in several configurations depending on your control requirements. The drive handles continuous currents up to 6 Amps and is protected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

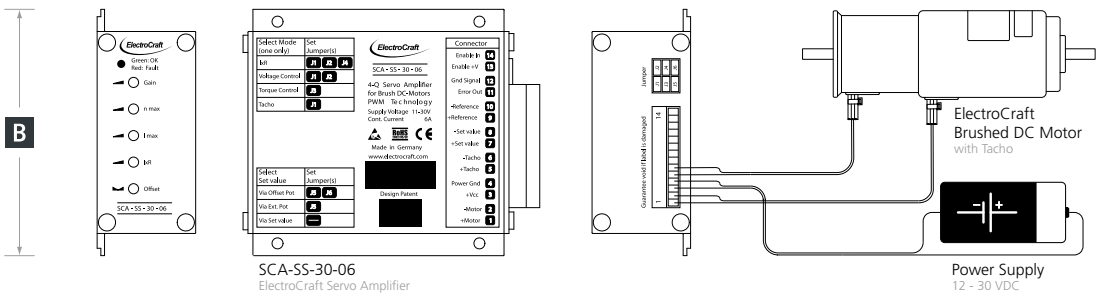
Drive Model Example

SC	A	S	E	30	06
Drive Technology	Case Type	Drive Type	Version	Voltage VDC	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

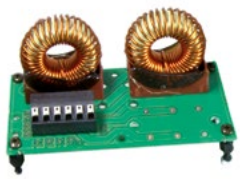
Display	
LEDs	green = OK / red = Fault

Potentiometers	
Function of Potentiometer	Gain; nmax; Imax; IxR; 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	IxR-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.

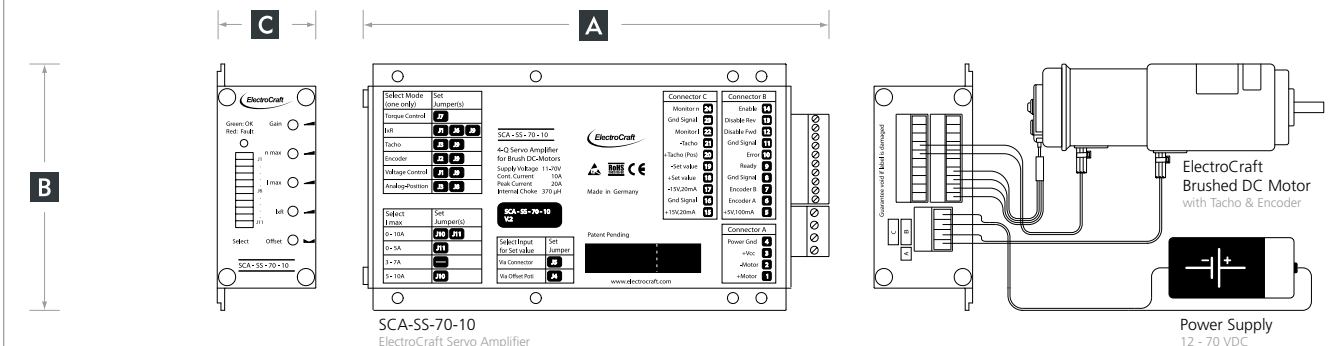
This PWM four-quadrant brushless DC servo amplifier is fully enclosed in a rugged aluminum case which can be panel mounted for easy integration. The drive can be configured in a variety of torque and speed control modes with the mode of operation being set by simple DIP switches. The drive handles continuous 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.

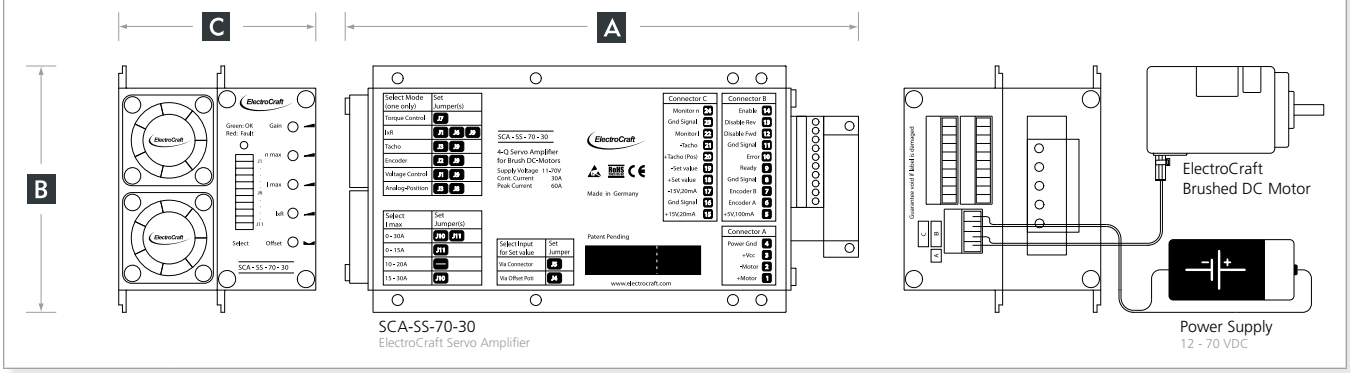
Drive Model Example

SC	A	S	S	70	10
Drive Technology	Case Type	Drive Type	Version	Voltage VDC	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

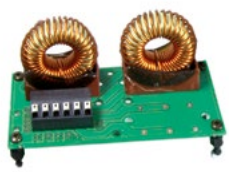
Display	
LEDs	green = OK / red = Fault

Potentiometers	
Function of Potentiometer	Gain; nmax; Imax; IxR; Offset

Ambient conditions	
Operation temperature (°C)	-10 to +45
Storage temperature (°C)	-40 to +85
Humidity Range Not Condensing (%rel)	20 to 80 % rel.

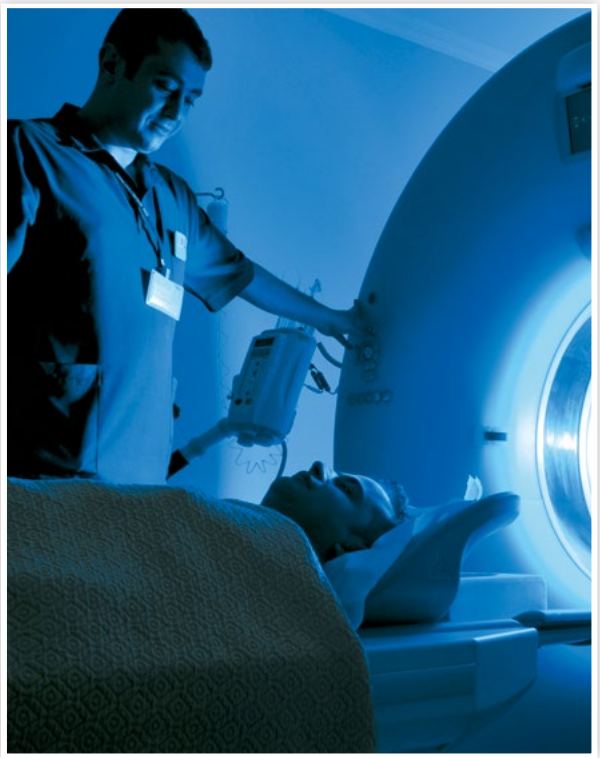
Mode of Operation					
Torque-control	IxR-compensation	Speed-control by DC-tacho	Speed-control by encoder	Speed-control by voltage	Analog-positioning

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

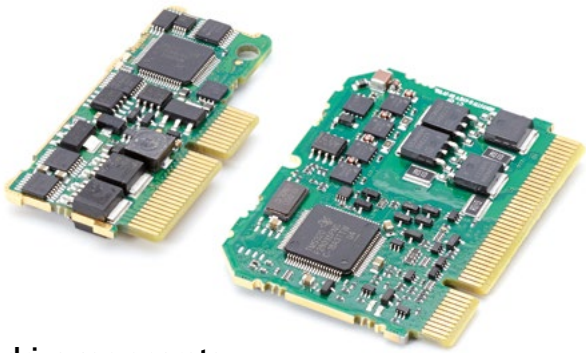


Programmable Servo Drive

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.



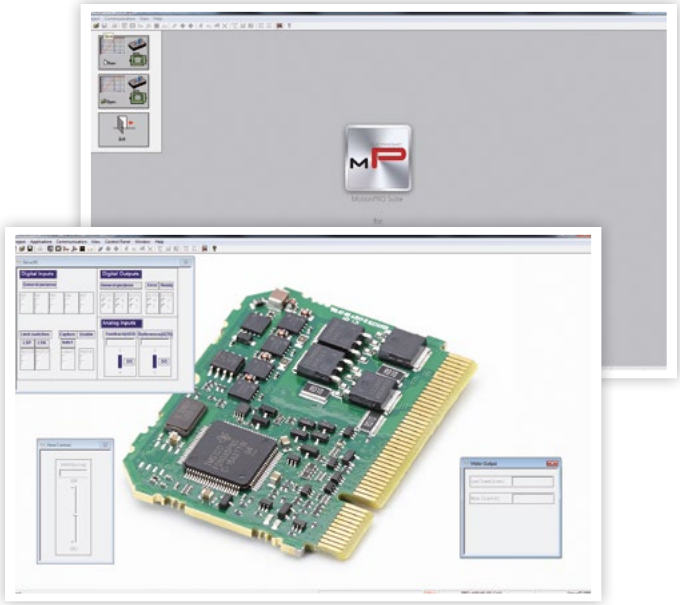
The drive can operate:

- 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 I^2t

PRO-A04V36: PRO Series | Programmable Servo Drive

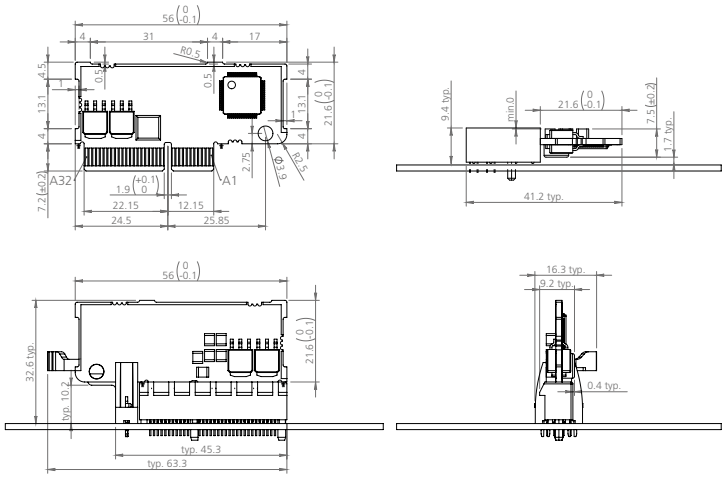
Drive Model Example

P	R	O	—	A	0	4	V	3	6	A	—	P	E	—	C	A	N
Product Family				Drive Technology	Cont. Current			Bus Voltage		Revision		Form Factor			Network		

PE = PCB Mount
SA = Stand Alone

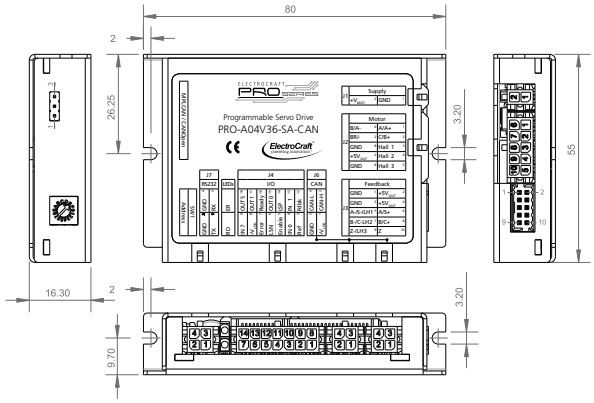
PCB Mount PRO-A04V36x-PE-CAN Outline Drawing

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 maximim 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 maximim 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

PRO-A08V48: PRO Series | Programmable Servo Drive

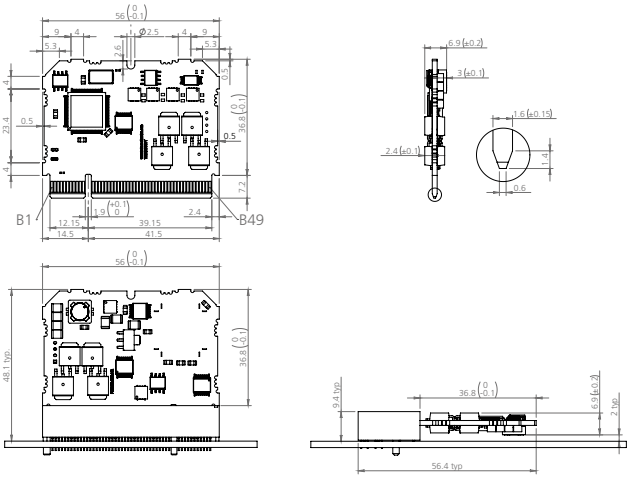
Drive Model Example

P	R	O	—	A	0	8	V	4	8	A	—	P	E	—	C	A	N
Product Family				Drive Technology	Cont. Current			Bus Voltage		Revision		Form Factor			Network		

PE = PCB Mount
SA = Stand Alone

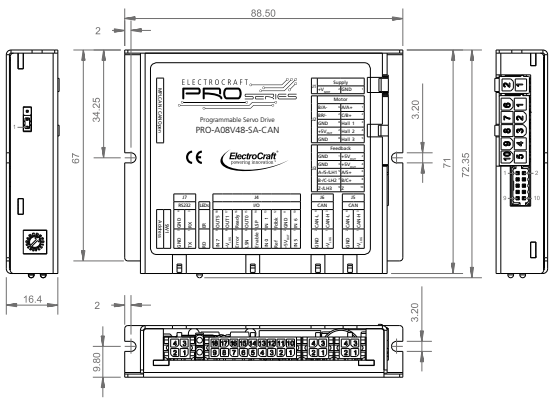
PCB Mount PRO-A08V48x-PE-CANOutline Drawing

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 maximim 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 maximim 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

PRO-A10V80: PRO Series | Programmable Servo Drive

Drive Model Example

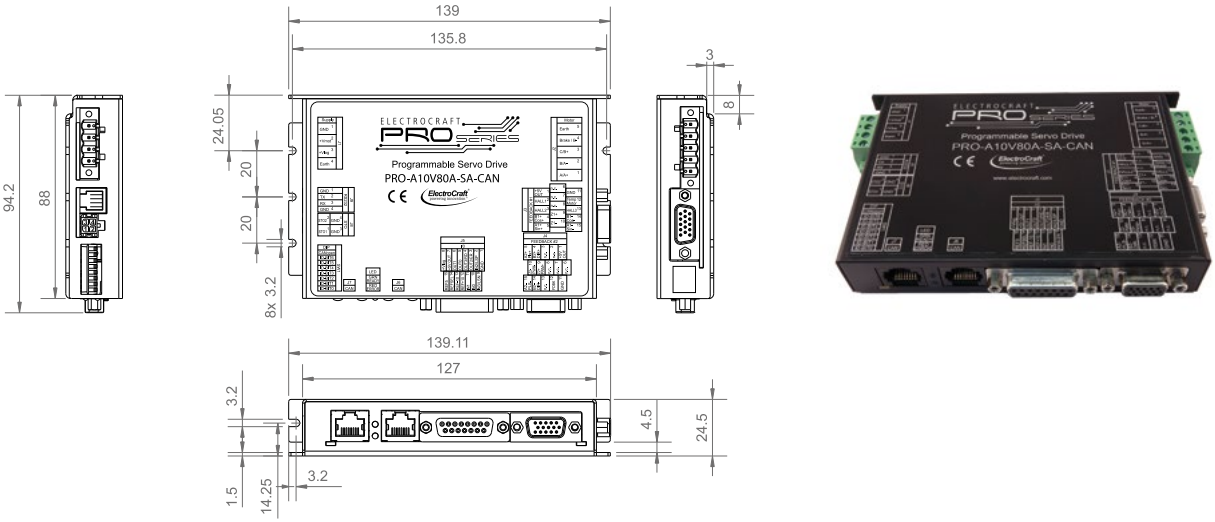
P	R	O	—	A	1	0	V	8	0	A	—	S	A	—	C	A	N
Product Family				Drive Technology	Cont. Current			Bus Voltage		Revision		Form Factor			Network		

SA = Stand Alone

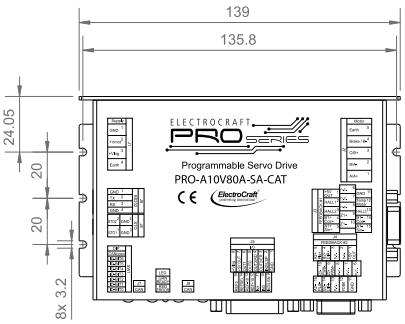
Outline Drawing

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 maximim 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 maximim 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

PRO-A20V80: PRO Series | Programmable Servo Drive

Drive Model Example

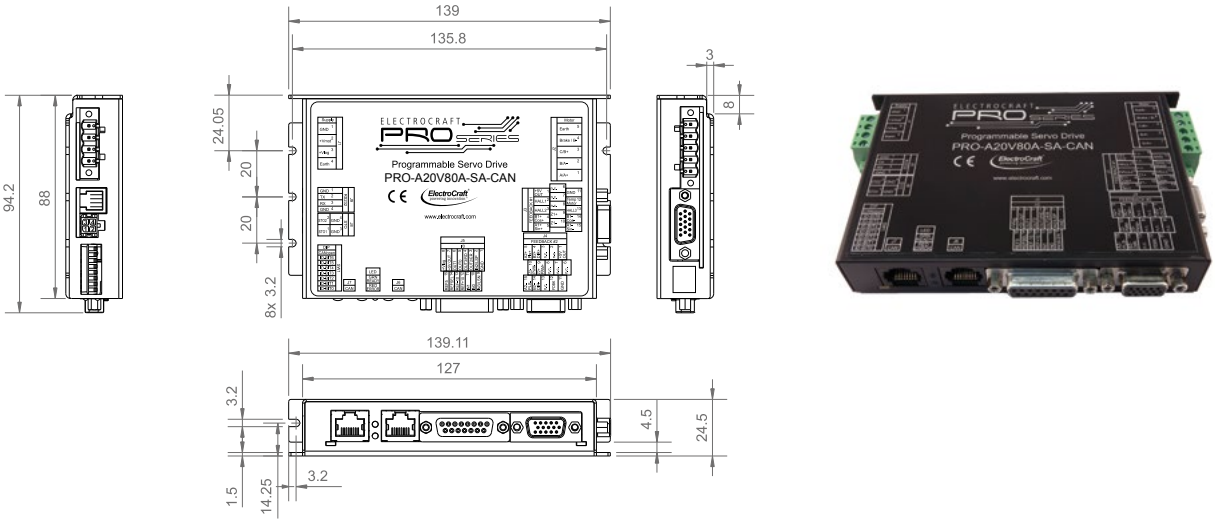
P	R	O	—	A	2	0	V	8	0	A	—	S	A	—	C	A	N
Product Family				Drive Technology	Cont. Current			Bus Voltage		Revision		Form Factor			Network		

SA = Stand Alone

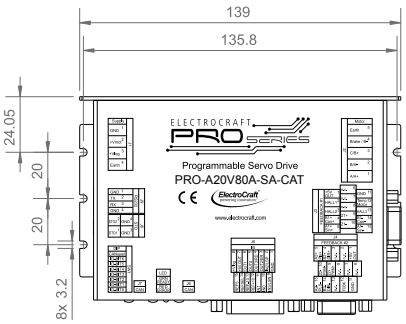
Outline Drawing

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 maximim 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 maximim 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			

PRO

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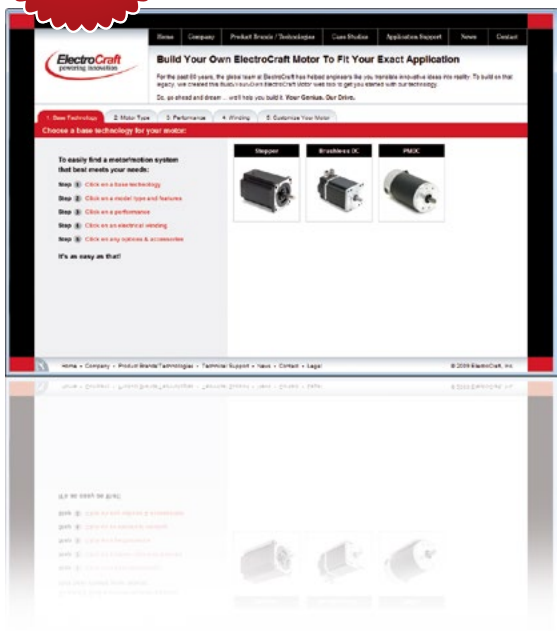

System Matrix - Matching Motor and Drive Combinations

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-70-30J	PRO-A04V36	PRO-A08V48	PRO-A10V80	PRO-A20V80
DirectPower Plus - DDP	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*													

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

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- 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

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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 ±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™ I 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™ I 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.

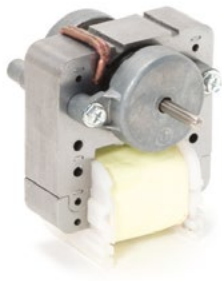
MobilePower™ I Transmissions

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 hobbed to a precision AGMA 9-Class.

SolidPower™ Plus I 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™ I 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. DPP 240 T – 29 V 48 – 1 0 2 – C

- DPP: Product Name
- 240: Frame Size
- T: Optional Tachometer
- 29: Continuous Torque (oz-in)
- V: Product Name
- 48: Voltage
- 1: Rear Shaft
- 0: Front Shaft
- 2: Lead Option
- C: Encoder

b. DPP 240 M T – 20 V 48 – 1 0 2 – C

- DPP: Product Name
- 240: Frame Size
- M: Optional Metric
- T: Optional Tachometer
- 20: Continuous Torque (Ncm)
- V: Product Name
- 48: Voltage
- 1: Rear Shaft
- 0: Front Shaft
- 2: Lead Option
- C: Encoder

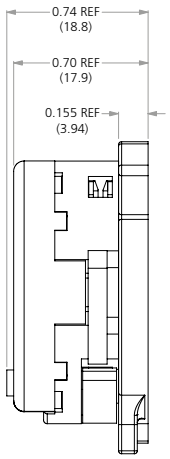
Step 4: PMDC Motor Features

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 Mating Connection: Connector: Molex 50-84-2022 Molex 02-08-1002 (loose)	D = 1000 Line
Rear shaft required for all encoder models.	2 = key seat Available on shaft diameters 0.3150 inches (8mm) and larger	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

Aluminium Din Rail kit with
L-shaped bracket for units:
SCA-Lx / SCA-Sx
(not used for SCA-SS-70-30)

P/N ASX-RM-01-01

Braking module

Braking module in a
rugged aluminium case.

P/N ASO-BM-70-30

Passive heatsink

Passive heatsink optimized for drives:

DA43

P/N HA2008

Passive heatsink

Passive heatsink optimized for drives:

DA47

P/N HA3008

fanned heatsink

One fan heatsink optimized for drives
(fan is 1 x 24 VDC, .8 W):

DA43

P/N HA2018

fanned heatsink

One fan heatsink optimized for drives
(fan is 1 x 24 VDC, .8 W):

DA47

P/N HA3018

fanned heatsink

Two fan heatsink optimized for drives
(fans are 2 x 24 VDC, .8 W):

DA43

P/N HA2028

fanned heatsink

Two fan heatsink optimized for drives
(fans are 2 x 24 VDC, .8 W):

DA47

P/N HA3028

Choke module

Choke module optimized for brushless drives.

Inductance: IA2100 = 2x50 µH;
IA2101 = 2x100 µH
Nominal current: 10 A

P/N IA210x

DIN Rail mounting kit

DIN Rail mounting kit for units:

DA43 / DA47

P/N MA0025

Break Out Board

Break Out Board for:

for DA-Series

P/N WA2509

DIN Rail mounting kit

DIN Rail mounting kit for:

ASO-BM-70-30

P/N MA3050

To learn more about our products and services, please visit www.electrocraft.com or contact ElectroCraft today and see how we can help power your innovation.

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