ElectroCraft
powering innovation™

Catalog EC04EN

Brushless

Motors

- RapidPower Series
- RapidPower Plus Series

Drives

- EA-Series
- SC-Series
- ACS-Series
- ACE-Series
- PFC-Series
- PRO-Series

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 media & brands · www.media-brands.de

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Typical applications for

ElectroCraft BLDC Motors:

- Custom OEM applications (Our Specialty)
- Packaging
- Semiconductor handling and testing
- Antenna positioning
- Laboratory equipment
- Rapid prototyping machines
- Medical equipment
- Dispensing

Throttle Linkage Valve

Situation: A manufacturer of large diesel engines needed a motor to actuate a throttle linkage valve. The high acceleration torque requirement of the application made this existing brush motor customer consider ElectroCraft's brushless DC motor technology.

The motor had to meet very strict life requirements, demanding performance requirements, and be able to withstand the high temperatures involved in an under-the-hood environment.

Solution: ElectroCraft designed a custom output shaft with a hardened helical gear geometry to mate with customer's gear box. The stator had to be potted with a high temperature plastic, and high temperature grease and seals were required to protect the motor and reduce premature fatigue. Additionally, the hall device PC board had to be custom designed to fit through a special front mounting bracket which mated with the customer's control board.

Results: To date, 1000's of motors have shipped and are successfully working the field. The exceptional life and performance of the ElectroCraft solution has led to additional applications for the same type of motor with this customer.

A highly customized brushless DC motor and gearbox fuels the motion requirements for this diesel engine throttle control.

Satellite Positioning System

Situation: A manufacturer of a stabilized antenna system needed a cost effective, sealed servo motor for their antenna control. Many satellite positioning systems incorporate stepper motor technology but since the point of reference for the satellite was on board a moving vessel, the brushless servo technology was used to provide real-time, closed loop control. The system had to function in a marine environment, which is highly corrosive and subject to large temperature variations.

Solution: ElectroCraft developed a motor featuring special paint, coatings, and fasteners to meet the performance, environmental, and commercial needs of the customer.

Results: The initial solution evolved into a family of related products, increasing sales for the customer and further developing the technical presence of the company in their industry.

A highly reliable brushless DC motor keeps this satellite antenna on track in a harsh and demanding marine environment.

An ElectroCraft motor with a custom cable assembly helps keep liquid and this business flowing

Automated Fluid Dispensing Equipment

Situation: A manufacturer of innovative dispensing equipment for a wide variety of automated assembly applications needed a cost effective, highly reliable servo motor to drive a Cartesian robot (XY-stage).

Solution: ElectroCraft developed a high performance solution in a compact package, along with integrating custom features, such as a custom cable assembly, to reduce the customer's assembly time.

Results: This customer has built over 2,000 machines with a 30% reduction in machine assembly time as a result of the ElectroCraft motor with custom cable assembly.

ElectroCraft®
powering innovation™

Select your

Brushless DC Products!

ElectroCraft RapidPower™ Series Motor (RP-Series)

Sizes: NEMA 17, 23 & 34

Continuous Torque: up to 313 oz-in or 221 Ncm

Features:

- Standard mounting configuration
- Designed for IP40 rating
- High torque to volume ratio
- Skewed magnetization, Neodymium magnet design
- Metric and imperial configurations
- Available with hall effect, single ended, or differential encoder

ElectroCraft RapidPower™ Plus Series (RPP-Series)

Sizes: NEMA 23, 34

Continuous Torque: up to 568 oz-in or 400 Ncm

Features:

- Rugged industrial housed construction
- TENV enclosure design with optional O-rings for environmental sealing
- Low cogging torque, high energy Neodymium magnet design
- Metric and imperial configurations
- Differential optical encoder - standard configuration
- Integral connectors (straight or right angle) and cable versions available

BLDC Drive Product Matrix

	CompletePower										CompletePower Plus						PRO Series	
	2 Quadrant						4 Quadrant											
	DC Input Power										DC Input Power			AC Input Power			DC Input	
	EA2506	EA2708	EA2716	SCO-B1-50-18	SCO-B1-50-40	SCO-B1-60-18	EA4709	EA4718	SCA-B4-70-10	SCA-B4-70-30	ACS100	ACS200	ACS300	ACE500	ACE1200	ACE1300	PRO-A04V36	PRO-A08V48
Product Description																		
See on page	17	19	19	25	25	25	v	21	23	23	29	29	29	31	33	33	39	41
Power Features																		
AC Input (90 - 254VAC) 1ø														●	●	●		
AC Input (90 - 254VAC) 3ø															●	●		
Min. Voltage (VDC)	11	11	11	20	20	30	9	9	11	11	24	24	24	120	120	120	11	11
Max. Voltage (VDC)	50	70	70	50	50	60	70	70	70	70	48	48	48	360	400	400	36	48
PWM Output	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Trap Waveform	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Sine Waveform											●	●	●	●	●	●	●	●
Output Frequency (kHz)	50	20	20	20	20	20	50	50	49	49	40	40	40	30	30	30	up to 60	up to 60
Power Ratings																		
Peak Current (RMS)							12.7	25.5	14.1	42.4	4.9	7.1	14.1	7.8	9.9	14.8	7.1	14.1
Continuous Current (RMS)	4.2	5.7	11.3	12.7	28.3	12.7	6.4	12.7	7.1	21.2	2.5	3.5	7.8	3.5	5.0	10.0	2.8	5.7
Continuous Power (W)	300	560	1120	900	2000	1080	630	1260	700	2100	119	170	373	1625	2275	4550	144	385
Control Modes																		
Torque Control	●						●	●	●	●	●	●	●	●	●	●	●	●
Speed Control using Halls	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Speed Control using Encoder							●	●	●	●	●	●	●	●	●	●	●	●
Analog Command (VDC)	+10	+5	+5	+5	+5	+5	±10	±10	±10	±10	±10	±10	±10	±10	±10	±10	0-5	0-5
Analog Position											●	●	●	●	●	●	●	●
Step/Direction											●	●	●	●				
Position Control											●	●	●	●			●	●
Fully Programmable Instruction Set																	●	●
Communication / Compliance																		
Optically Isolated Control Logic	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Programmable I/O																	●	●
RS232 Serial											●	●	●	●	●	●	●	●
CAN-Bus 2.0B / CANopen																	●	●
Upgradeable DSP firmware											●	●	●	●	●	●	●	●
Serial drive status/diagnostics											●	●	●	●	●	●	●	●
Windows set-up software											●	●	●	●	●	●	●	●
UL Recognized														●	●	●		
CE Compliance (LV Directive)	●	●	●	●	●	●	●	●	●	●				●	●	●	●	●
RoHS	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●
Physical Enclosure																		
Totally Enclosed	●	●	●				●	●	●	●	●	●	●	●	●	●	●	●
Case Type	Book Shelf						Book Shelf		Rack		Open			Book Shelf			Book Shelf	

RP17 : ElectroCraft RapidPower™ | BLDC Motor

Size	Peak Torque oz-in (Ncm)	Speeds up to RPM
NEMA 17	136 (96)	11000

High-Performance. Good Price.

Our RapidPower Nema 17 is a compact, high-performance brushless motor incorporating ball bearing construction, a low cogging electro-magnetic design with both low audible and magntic noise. It is available with a hall-effect commutation encoder or a variety of optical encoders for higher precision applications.

To build your own motor, choose the:

1 - Frame Size (Imperial or Metric) **2** - Torque **3** - Winding **4** - Features (see page 55)

a. RP17 — 45 V 24 — 000 — X

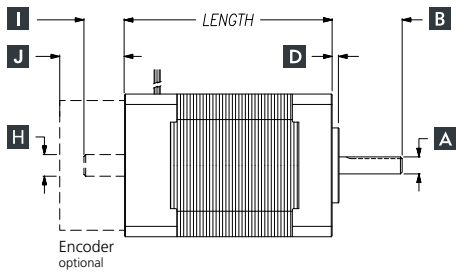
- RP: Product Name
- 17: Frame Size
- 45: Continuous Torque (oz-in)
- 24: Voltage
- 000: Rear Shaft / Front Shaft / Lead Option
- X: Encoder

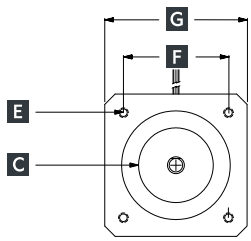
b. RP17M — 32 V 24 — 000 — X

- RP: Product Name
- 17: Frame Size
- M: Optional Metric
- 32: Continuous Torque (Ncm)
- 24: Voltage
- 000: Rear Shaft / Front Shaft / Lead Option
- X: Encoder

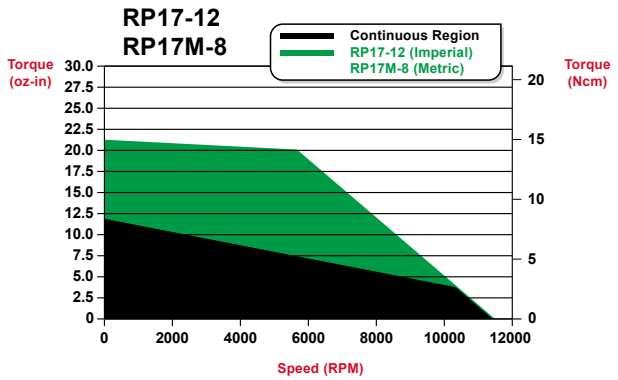
Step 1: RP17 & RP17M Frame Size Drawing Key

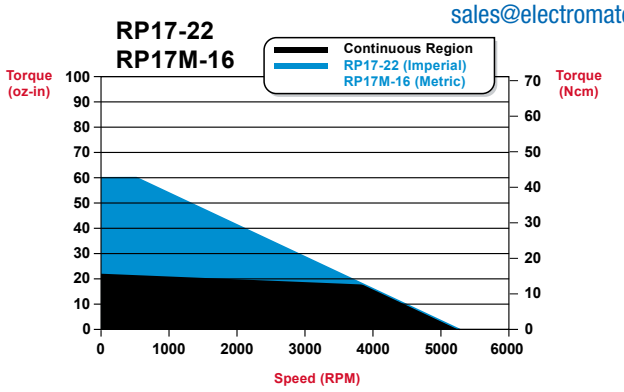
Model	MAX Length	A Front Shaft Diameter	B Front Shaft Length	C Pilot Diameter	D Pilot Length (Ref)	E Mount Hole Pattern (Ref)	F Mount Hole Spacing (Ref)	G Flange External Dimension SQ (Ref)	H Rear Shaft Diameter	I Rear Shaft Length	J Encoder Length (Ref) Single Ended / Differential
RP17-12	1.60 in	0.1968 in 0.1963 in	0.81 in ±0.03	0.8660 in 0.8648 in	0.08 in	[4] 4-40 in UNC-2B 0.17 in Deep Min	1.22 in	1.65 in	0.2500 in 0.2495 in	0.47 in ±0.040	0.35 in / 0.55 in
RP17-22	2.40 in										
RP17-36	3.20 in										
RP17-45	4.00 in										
RP17M-8	41 mm	5.000 mm 4.987 mm	20.6 mm ±0.76	22.00 mm 21.97 mm	2 mm	[4] M3 x 0.5 4.3 mm Deep Min	31 mm	42 mm	6.350 mm 6.337 mm	11.4 mm ±0.7	8.9 mm / 14.0 mm
RP17M-16	61 mm										
RP17M-25	81 mm										
RP17M-32	101 mm										

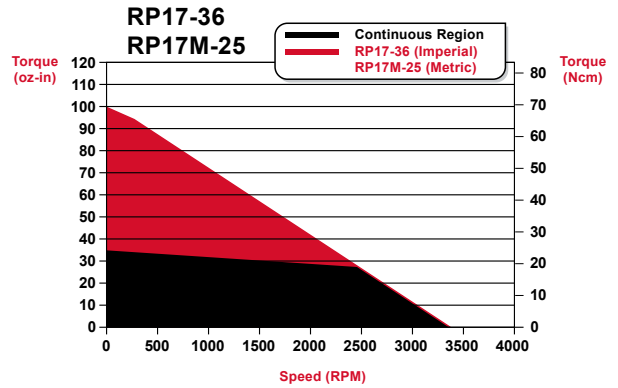


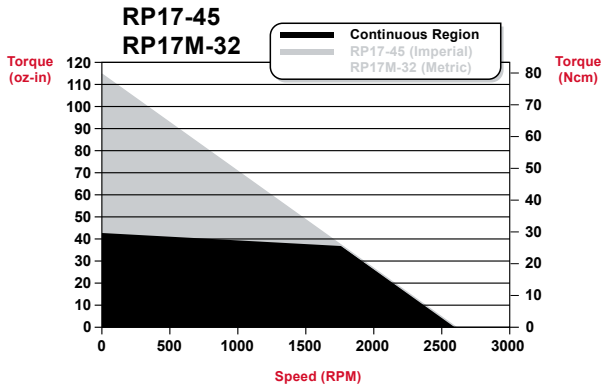


Step 2: RP17 Torque and Mechanical Data









Stack Size Models	RP17-12 / RP17M-8	RP17-22 / RP17M-16	RP17-36 / RP17M-25	RP17-45 / RP17M-32
Cont Stall Torque oz-in (Ncm)	12 (8)	22 (16)	36 (25)	45 (32)
Peak Torque oz-in (Ncm)	21 (15)	60 (42)	100 (71)	136 (96)
No Load Speed RPM	11400	5300	3400	2600
Inertia oz-in-sec² (g-cm²)	0.00076 (53.6)	0.00118 (83.3)	0.00159 (112.2)	0.00191 (134.8)
Motor Weight oz (kg)	9.0 (0.25)	17.0 (0.48)	23.5 (0.66)	31.0 (0.87)
Poles	4	4	4	4

Step 3: Available Windings

Imperial	12V24	12V48	12V60	22V24	22V48	22V60	36V24	36V48	36V60	45V24	45V48	45V60
Metric	8V24	8V48	8V60	16V24	16V48	16V60	25V24	25V48	25V60	32V24	32V48	32V60
Voltage (Vdc)	24	48	60	24	48	60	24	48	60	24	48	60
Voltage Constant V/kRPM	2.1	4.2	5.3	4.5	9.0	11.3	7.1	14.2	17.8	9.2	18.4	23.0
Torque Constant oz-in/A (Ncm/A)	2.8 (2.0)	5.7 (4.0)	7.2 (5.1)	6.1 (4.3)	12.2 (8.6)	15.2 (10.7)	9.6 (6.8)	19.2 (13.6)	24.1 (17.0)	12.4 (8.8)	24.9 (17.6)	31.1 (22.0)
Max Cont Current (A)	4.2	2.1	1.7	3.6	1.8	1.4	3.7	1.9	1.5	3.6	1.8	1.4
Peak Current (A)	7.6	3.8	3.0	9.9	4.9	3.9	10.4	5.2	4.2	10.9	5.5	4.4

RP23 : ElectroCraft RapidPower™ | BLDC Motor

Size	Peak Torque oz-in (Ncm)	Speeds up to RPM
NEMA 23	190 (134)	8000

High-Performance. Good Price.

Our RapidPower Nema 23 is a compact, high-performance brushless motor incorporating ball bearing construction, a low cogging electro-magnetic design with both low audible and magnetic noise. It is available with a hall-effect commutation encoder or a variety of optical encoders for higher precision applications.

To build your own motor, choose the:

1 - Frame Size (Imperial or Metric) **2** - Torque **3** - Winding **4** - Features (see page 55)

a. RP23 — 73 V 24 — 000 — X

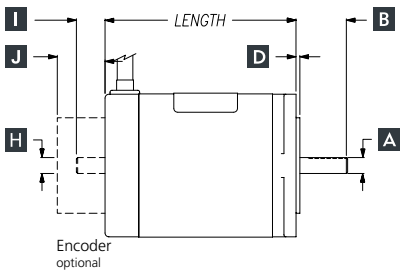
- RP: Product Name
- 23: Frame Size
- 73: Continuous Torque (oz-in)
- V: Winding
- 24: Voltage
- 000: Rear Shaft, Front Shaft, Lead Option
- X: Encoder

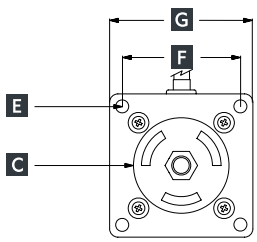
b. RP23M — 52 V 24 — 000 — X

- RP: Product Name
- 23: Frame Size
- M: Optional Metric
- 52: Continuous Torque (Ncm)
- V: Winding
- 24: Voltage
- 000: Rear Shaft, Front Shaft, Lead Option
- X: Encoder

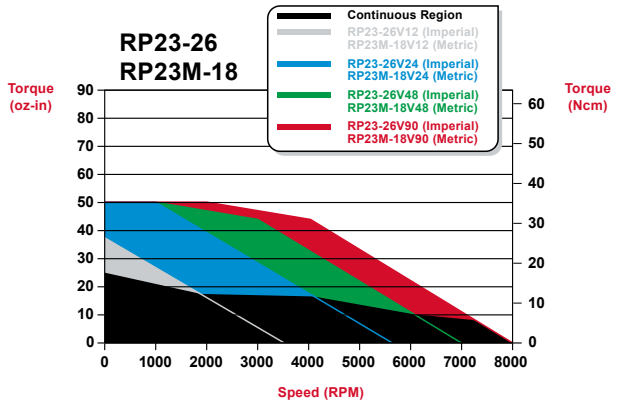
Step 1: RP23 & RP23M Frame Size Drawing Key

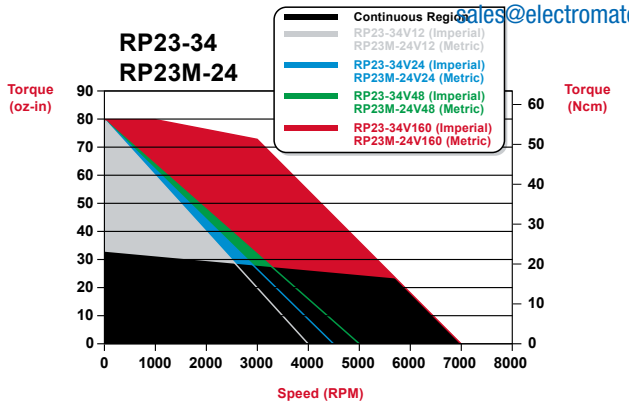
Model	MAX Length	A Front Shaft Diameter	B Front Shaft Length	C Pilot Diameter	D Pilot Length (Ref)	E Mount Hole Pattern (Ref)	F Mount Hole Spacing (Ref)	G Flange External Dimension (Ref)	H Rear Shaft Diameter	I Rear Shaft Length	J Encoder Length (Ref) Single Ended / Differential
RP23-26	1.60 in	0.2500 in 0.2495 in	0.81 in ±0.03	1.500 in 1.498 in	0.06 in	[4] 0.205 in ± 0.010 on 2.625 in D.B.C.	1.86 in	2.25 in	0.2500 in 0.2495 in	0.47 in ±0.030	0.35 in / 0.55 in
RP23-34	2.00 in										
RP23-54	3.00 in										
RP23-73	4.00 in										
RP23M-18	41 mm	8.000 mm 7.987 mm	25 mm ±0.8	36 mm ±0.05	1.5 mm	[4] 4.5 mm ± 0.25 on 65 mm D.B.C.	46 mm	57 mm	6.350 mm 6.337 mm	11.4 mm ±0.7	8.9 mm / 14.0 mm
RP23M-24	51 mm										
RP23M-38	77 mm										
RP23M-52	102 mm										

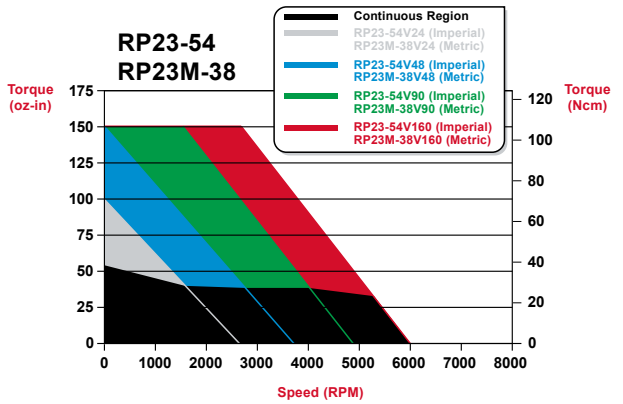


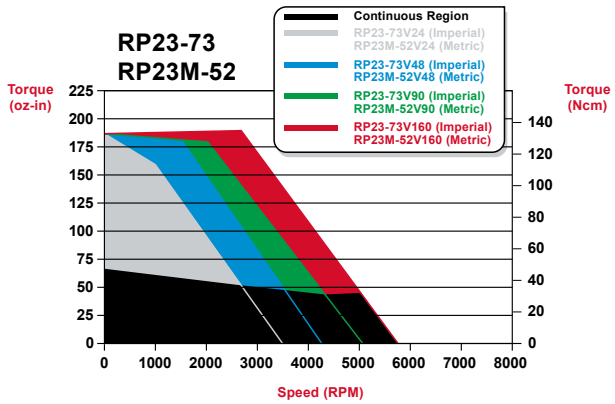


Step 2: RP23 Torque and Mechanical Data









Stack Size Models	RP23-26 / RP23M-18	RP23-34 / RP23M-24	RP23-54 / RP23M-38	RP23-73 / RP23M-52
Cont Stall Torque oz-in (Ncm)	26 (18)	34 (24)	54 (38)	73 (52)
Peak Torque oz-in (Ncm)	50 (35)	80 (56)	150 (106)	190 (134)
No Load Speed RPM	8000	7000	6000	5750
Inertia oz-in-sec² (g-cm²)	0.00152 (107.3)	0.00286 (202.0)	0.00470 (331.9)	0.007151 (505.0)
Motor Weight oz (kg)	15 (0.43)	21 (0.59)	31 (0.87)	47 (1.32)
Poles	4	4	4	4

Step 3: Available Windings

Imperial	26V12	26V24	26V48	26V90	34V12	34V24	34V48	34V160	54V12	54V24	54V48	54V160	73V24	73V48	73V90	73V160
Metric	18V12	18V24	18V48	18V90	24V12	24V24	24V48	24V160	38V12	38V24	38V48	38V160	52V24	52V48	52V90	52V160
Voltage (Vdc)	12	24	48	90	12	24	48	160	12	24	48	160	24	48	90	160
Voltage Constant V/kRPM	3.4	4.2	6.7	11.3	3.0	5.5	9.6	22.9	4.9	6.5	10.0	26.7	6.7	11.2	18.0	28.1
Torque Constant oz-in/A (Ncm/A)	4.6 (3.2)	5.7 (4.0)	9.1 (6.4)	15.2 (10.7)	4.1 (2.9)	7.5 (5.3)	13.0 (9.2)	30.9 (21.8)	6.6 (4.7)	8.8 (6.2)	13.5 (9.5)	36.1 (25.5)	9.0 (6.4)	15.1 (10.7)	24.3 (17.2)	38.0 (26.8)
Max Cont Current (A)	5.3	4.6	2.6	1.6	8.6	4.5	2.5	1.1	8.7	5.7	4.2	1.5	8.3	4.7	3.1	1.9
Peak Current (A)	11.0	8.8	6.5	3.5	17.5	10.0	7.0	2.6	15.1	18.5	11.1	4.2	25.3	14.4	8.5	5.4

RP34 : ElectroCraft RP Series | BLDC Motor

Size	Peak Torque oz-in (Ncm)	Speeds up to RPM
NEMA 34	1096 (774)	7000

Good-Performance. Good Price.

Our RapidPower Nema 34 is a compact, high-performance brushless motor incorporating ball bearing construction, a low cogging electro-magnetic design with both low audible and magnetic noise. It is available with a hall-effect commutation encoder or a variety of optical encoders for higher precision applications.

To build your own motor, choose the:

1 - Frame Size (Imperial or Metric) | **2** - Torque | **3** - Winding | **4** - Features (see page 55)

a. RP 34 — 313 V 24 — 000 — X

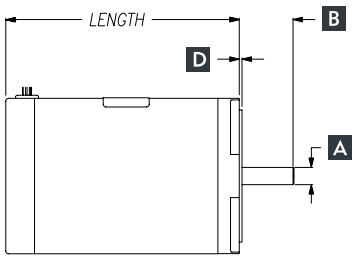
- RP: Product Name
- 34: Frame Size
- 313: Continuous Torque (oz-in)
- V 24: Voltage
- 000: Rear Shaft, Front Shaft, Lead Option
- X: Encoder

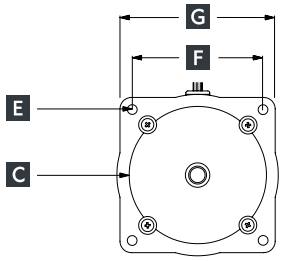
b. RP 34 M — 221 V 24 — 000 — X

- RP: Product Name
- 34: Frame Size
- M: Optional Metric
- 221: Continuous Torque (Ncm)
- V 24: Voltage
- 000: Rear Shaft, Front Shaft, Lead Option
- X: Encoder

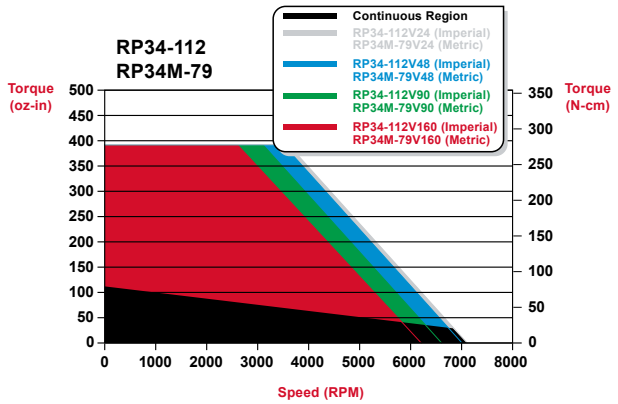
Step 1: RP34 & RP34M Frame Size Drawing Key

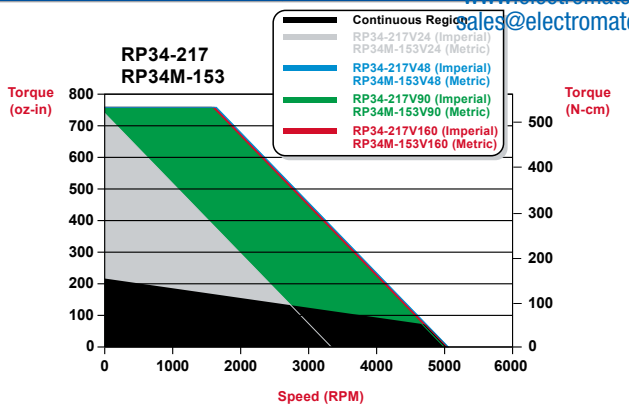
Model	MAX Length	A Front Shaft Diameter	B Front Shaft Length	C Pilot Diameter	D Pilot Length (Ref)	E Mount Hole Pattern (Ref)	F Mount Hole Spacing (Ref)	G Flange External Dimension (Ref)	H Rear Shaft Diameter	I Rear Shaft Length	J Encoder Length (Ref) Single Ended / Differential
RP34-112	2.84 in	0.3750 in 0.3745 in	1.25 in ±0.03	2.875 in 2.873 in	0.06 in	[4] 0.220 in ± 0.010 on 3.875 in D.B.C.	2.74 in	3.38 in	0.2500 in 0.2495 in	0.500 in ±0.040	0.35 in / 0.55 in
RP34-217	4.15 in										
RP34-313	5.47 in										
RP34M-79	72 mm	14.000 mm 13.989 mm	30 mm ±0.8	80.012 mm 79.993 mm	1.5 mm	[4] 7 mm +0.36/-0.00 on 100 mm D.B.C.	71.71 mm	85.85 mm	6.3424 mm 6.3297 mm	11.4 mm ±0.7	8.9 mm / 14.0 mm
RP34M-153	105 mm										
RP34M-221	139 mm										

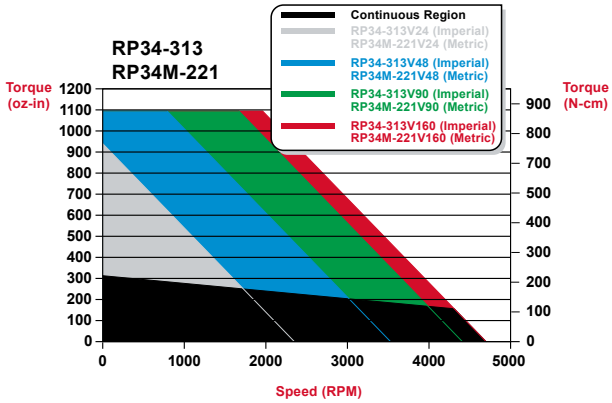




Step 2: RP34 Torque and Mechanical Data







Stack Size Models	RP34-112 / RP34M-79	RP34-217 / RP34M-153	RP34-313 / RP34M-221
Cont Stall Torque oz-in (Ncm)	112 (79)	217 (153)	313 (221)
Peak Torque oz-in (Ncm)	392 (277)	759 (536)	1096 (774)
No Load Speed RPM	7000	6500	5000
Inertia oz-in-sec² (g-cm²)	0.0149 (1053.4)	0.0258 (1824.3)	0.0385 (2715.3)
Motor Weight oz (kg)	64 (1.79)	100 (2.8)	143 (4.0)
Poles	4	4	4

Step 3: Available Windings

Imperial	112V24	112V48	112V90	112V160	217V24	217V48	217V90	217V160	313V24	313V48	313V90	313V160
Metric	79V24	79V48	79V90	79V160	153V24	153V48	153V90	153V160	221V24	221V48	221V90	221V160
Voltage (Vdc)	24	48	90	160	24	48	90	160	24	48	90	160
Voltage Constant V/kRPM	3.4	6.8	13.7	27.6	6.8	9.5	18.1	31.8	10.2	13.6	20.4	35.7
Torque Constant oz-in/A (Ncm/A)	4.6 (3.2)	9.2 (6.5)	18.5 (13.1)	37.3 (26.3)	9.2 (6.5)	12.8 (9.1)	24.4 (17.2)	43.0 (30.4)	13.8 (9.7)	18.4 (13.0)	27.5 (19.5)	48.2 (34.0)
Max Cont Current (A)	24.4	12.1	6.1	3.2	22.3	16.9	8.9	5.0	22.7	17.0	11.3	4.7
Peak Current (A)	85.2	42.6	21.2	11.2	76.0	59.1	31.1	17.6	68.1	59.6	39.7	23.8

RPP23 : ElectroCraft RapidPower™ Plus | AC Servo Motor

Size	Peak Torque oz-in (Ncm)	Speeds up to RPM
NEMA 23	400 (282)	6350

High Voltage. High Performance.

The ElectroCraft RapidPower™ Plus Nema 23 is a high voltage, high performance brushless servo motor incorporating the latest electro-magnetic components creating high continuous torque with low inertia for rapid acceleration. It is available with hall-effect commutation or a variety of commutating optical encoders for higher precision applications.

To build your own motor, choose the:

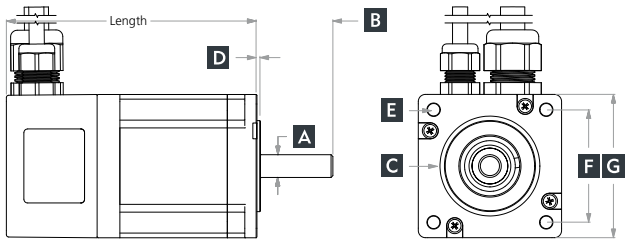
1 - Frame Size (Imperial or Metric)
2 - Torque
3 - Winding
4 - Features

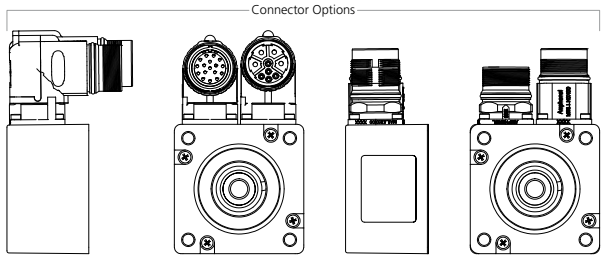
a. R P P 2 3 — 6 4 V 1 6 0 — 0 0 1 — X
b. R P P 2 3 M — 4 5 V 1 6 0 — 0 0 1 — X

- R P P: Product Name
- 2 3: Frame Size
- M: Optional Metric
- 6 4: Continuous Torque (oz-in)
- 4 5: Continuous Torque (Ncm)
- V 1 6 0: Voltage
- 0: Brake (0 = No Brake, 1 = 24VDC Brake)
- 0: Front Shaft (0 = Round, 1 = Flat, 2 = Keyway)
- 1: Termination (1 = Straight Connector, 2 = Flying Cable, 3 = Right Angle Connector, (All configuration IP65 with optional shaft seal))
- X: Feedback (X = None, D = 1000 line, E = 2000 line)

Step 1: RPP23 & RPP23M Frame Size Drawing Key

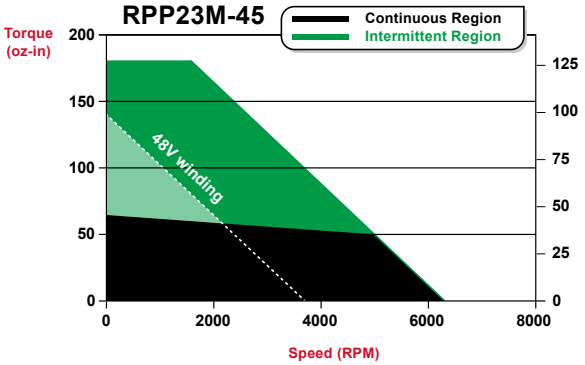
Model	MAX Length (w/o Brake)	A Front Shaft Diameter	B Front Shaft Length	C Pilot Diameter	D Pilot Length (Ref)	E Mount Hole Callout (Ref)	F Mount Hole Spacing (Ref)	G Flange External Dimension (Ref)
RPP23-64	4.20 in	0.3750 in 0.3745 in	1.25 in ± 0.03	1.500 in 1.498 in	0.06 in	[4] 0.205 in ± 0.010 on 2.625 in D.B.C.	1.86 in	2.36 in
RPP23-98	4.70 in							
RPP23-118	5.20 in							
RPP23-154	5.70 in							
RPP23M-45	106.7 mm	14.000 mm 13.987 mm	30 mm ± 0.8	50.00 mm 49.95 mm	1.5 mm	[4] 5.5 mm ± 0.25 on 70 mm D.B.C.	49.5 mm	60 mm
RPP23M-69	119.4 mm							
RPP23M-83	132.1 mm							
RPP23M-108	144.8 mm							



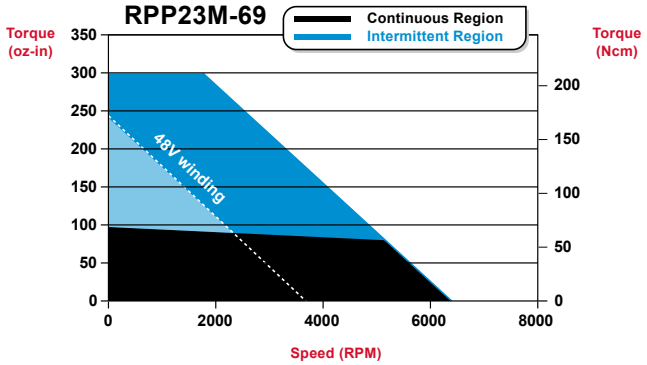


Step 2: RPP23 Torque and Mechanical Data

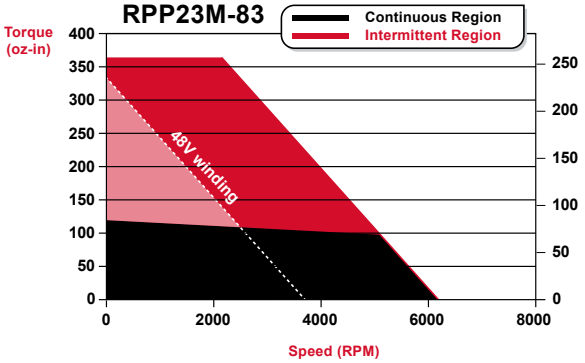
RPP23-64 / RPP23M-45



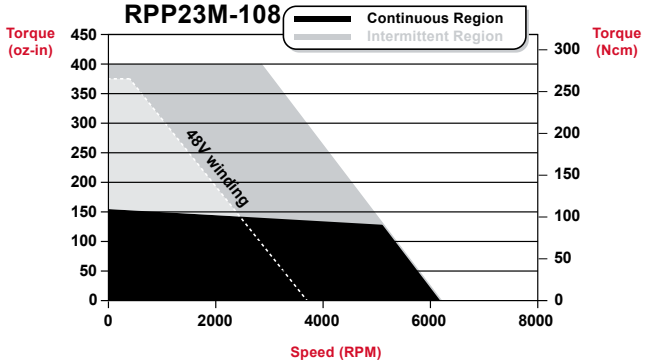
RPP23-98 / RPP23M-69



RPP23-118 / RPP23M-83



RPP23-154 / RPP23M-108



Stock Size Models	64V / 45V	98V / 69V	118V / 83V	154V / 108V
Cont Stall Torque oz-in (Ncm)	64 (45)	98 (69)	118 (83)	154 (108)
Peak Torque oz-in (Ncm)	180 (127)	300 (211)	360 (254)	400 (282)
Inertia oz-in-sec² (g-cm²)	.001 (70.6)	.0015 (106)	.002 (141)	.0026 (184)
Motor Weight oz (kg)	32 (.91)	41 (1.2)	48 (1.4)	53 (1.5)
Poles	8	8	8	8

Step 3: Available Windings

Imperial	64V48	64V160	64V325	98V48	98V160	98V325	118V48	118V160	118V325	154V48	154V160	154V325
Metric	45V48	45V160	45V325	69V48	69V160	69V325	83V48	83V160	83V325	108V48	108V160	108V325
Voltage (Vdc)	48	160	320	48	160	320	48	160	320	48	160	320
Voltage Constant V/kRPM	12.4	23.0	45.0	12.4	25.0	58.0	12.9	25.0	51.0	12.2	29.0	59.0
Torque Constant oz-in/A (Ncm/A)	16.7 (11.8)	31 (22)	61 (43)	16.7 (11.8)	34 (24)	78 (55)	17.4 (12.3)	36 (25)	68 (48)	16.6 (11.7)	39 (28)	79 (56)
Rated Torque oz-in (Ncm)	50 (35)	50 (35)	50 (35)	80 (56)	80 (56)	80 (56)	100 (71)	100 (71)	100 (71)	130 (92)	130 (92)	130 (92)
Rated Speed RPM	3000	4800	4800	3000	4600	4600	3000	4800	4800	3000	4500	4500
Max Cont Stall Current (A)	3.8	2.2	1.1	5.6	2.70	1.30	6.8	3.2	1.6	9.3	4.00	1.95
Peak Current (A)	11.00	6.40	3.20	15.0	7.50	4.20	20.0	8.20	4.80	25.00	10.50	4.30

RPP34 : ElectroCraft RapidPower™ Plus | AC Servo Motor

Size	Peak Torque oz-in (Ncm)	Speeds up to RPM
NEMA 34	2272 (1600)	5000

High Voltage. High Performance.

The ElectroCraft RapidPower™ Plus Nema 34 is a high voltage, high performance brushless servo motor incorporating the latest electro-magnetic components creating high continuous torque with low inertia for rapid acceleration. It is available with hall-effect commutation or a variety of commutating optical encoders for higher precision applications.

To build your own motor, choose the:

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

a. R P P 3 4 — 1 4 2 V 1 6 0 — 0 0 1 — X

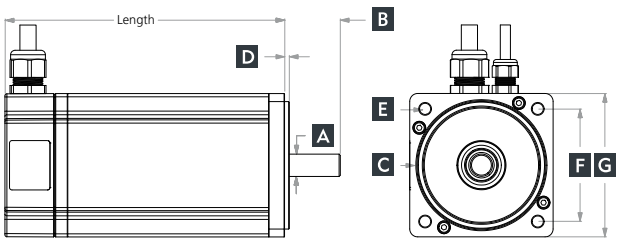
- R P P: Product Name
- 3 4: Frame Size
- 1 4 2: Continuous Torque (oz-in)
- V 1 6 0: Voltage
- 0: Brake (0 = No Brake, 1 = 24VDC Brake)
- 0: Front Shaft (0 = Round, 1 = Flat, 2 = Keyway)
- 1: Termination (1 = Straight Connector, 2 = Flying Cable, 3 = Right Angle Connector; All configuration IP65 with optional shaft seal)
- X: Feedback (X = None, D = 1000 line, E = 2000 line)

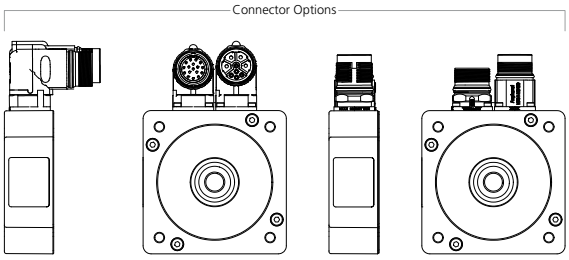
b. R P P 3 4 M — 1 0 0

- R P P: Product Name
- 3 4: Frame Size
- M: Optional Metric
- 1 0 0: Continuous Torque (Ncm)

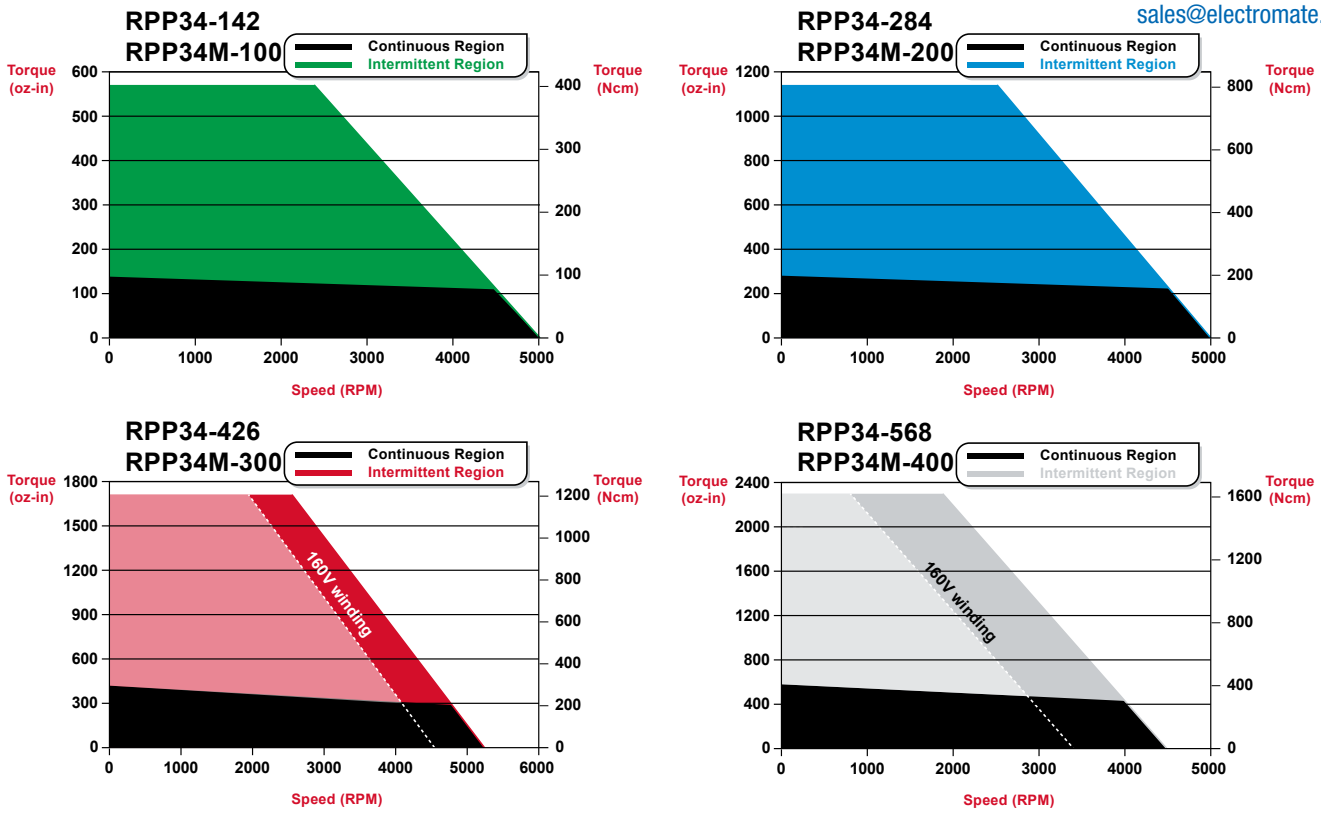
Step 1: RPP34 & RPP34M Frame Size Drawing Key

Model	MAX Length (w/o Brake)	A Front Shaft Diameter	B Front Shaft Length	C Pilot Diameter	D Pilot Length (Ref)	E Mount Hole Callout	F Mount Hole Spacing (Ref)	G Flange External Dimension (Ref)
RPP34-142	4.98 in	0.5000 in 0.4995 in	1.25 in ± 0.03	2.875 in 2.873 in	0.12 in	[4] 0.220 in ± 0.010 on 3.875 in D.B.C.	2.74 in	3.54 in
RPP34-284	5.96 in							
RPP34-426	6.95 in							
RPP34-568	7.93 in							
RPP34M-100	126.5 mm	14.000 mm 13.987 mm	35 mm ± 0.8	80.00 mm 79.95 mm	3.0 mm	[4] 7.0 mm ± 0.25 on 100 mm D.B.C.	70.7 mm	90 mm
RPP34M-200	151.5 mm							
RPP34M-300	176.5 mm							
RPP34M-400	201.5 mm							





Step 2: RPP34 Torque and Mechanical Data



Stock Size Models	142 / 100 V	284 / 200 V	426 / 300 V	568 / 400 V
Cont Stall Torque oz-in (Ncm)	142 (100)	284 (200)	426 (300)	568 (400)
Peak Torque oz-in (Ncm)	568 (400)	1136 (800)	1704 (1200)	2272 (1600)
Inertia oz-in-sec² (g-cm²)	.0046 (323)	.0092 (646)	.014 (969)	.018 (1292)
Motor Weight oz (kg)	84 (2.35)	111 (3.1)	138 (3.8)	166 (4.65)
Poles	8	8	8	8

Step 3: Available Windings

Imperial	142V160	142V325	284V160	284V325	426V160	426V325	568V160	568V325
Metric	100V160	100V325	200V160	200V325	300V160	300V325	400V160	400V325
Voltage (Vdc)	160	320	160	320	160	320	160	320
Voltage Constant V/kRPM	32.2	64.4	32.6	65.1	35.3	62.4	47.0	72.4
Torque Constant oz-in/A (Ncm/A)	43.5 (30.7)	87.1 (61.5)	44 (31.1)	88 (62.2)	47.7 (33.7)	84.4 (59.6)	63.6 (44.9)	97.9 (69.1)
Rated Torque oz-in (Ncm)	116 (82)	116 (82)	236 (167)	231 (163)	339 (239)	285 (201)	444 (314)	433 (306)
Rated Speed RPM	4510	4510	4920	4490	4000	4760	2890	2990
Max Cont Stall Current (A)	3.30	1.60	6.50	3.20	8.90	5.00	6.70	4.40
Peak Current (A)	13.00	6.50	25.80	12.90	35.70	20.70	26.80	17.40

EA25 : Electrocraft CompletePower™ | Speed or Torque Control

Power Supply Voltage (VDC)	Nominal Current (A-Pk of Sine)	Quadrants	Operation Mode		
			Torque Control	Speed Control by Hall Sensor	Speed Control by Digital Encoder
11 – 50	6	2	●	●	

For BLDC Motors. Up to 300W.

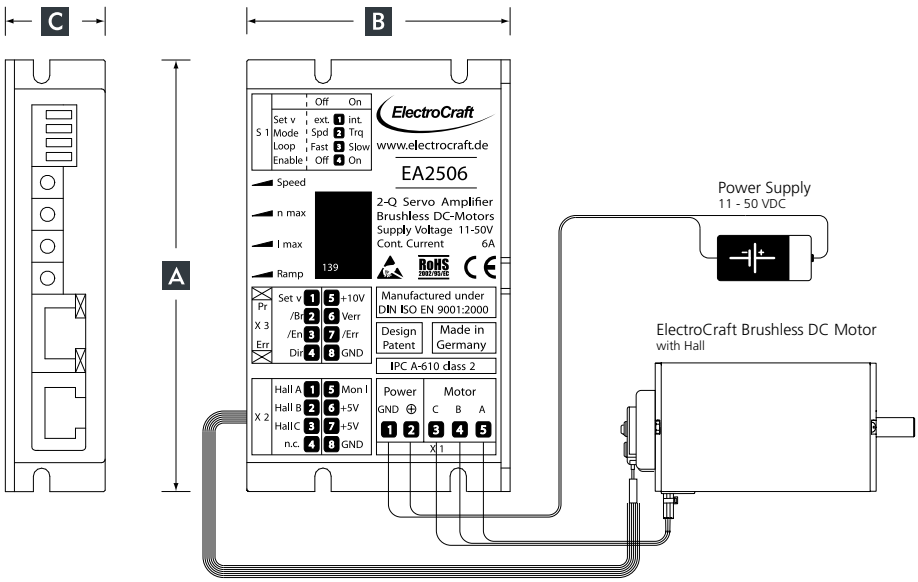
This two-quadrant brushless DC speed control is fully enclosed in an extremely small rugged aluminum case which can be DIN-rail mounted or panel mounted for easy integration. The drive includes an adjustable ramp generator for controlled acceleration and a torque mode. Mode of operation is set by simple DIP switches. This drive can provide 6 A of nominal current and can be powered by an 11-50 VDC range of supply voltage. The drive is protected against reversing, over-current, over-temperature and incorporates state of the art MOSFET technology for maximum efficiency. Connectivity is tool-free with RJ-45-CATs connectors for control/feedback inputs and push-type terminals for supply power and motor connections.

Drive Model Example

E	A	2	5	06
Drive Technology	Version	# Quadrants	Voltage 10x VDC	Current Amps

EA25 Outline Drawing

Model	A	B	C	Weight oz (g)
	Length in (mm)	Width in (mm)	Height in (mm)	
EA2506	3.66 (93)	2.19 (55.5)	0.89 (22.5)	4.23 (120)



EA25 Specifications						
Model Number	Power Supply Voltage (VDC)	Aux. Voltage Verror (VDC)	Nominal Current (A - Pk of Sine)	Max. Power with Heatsink (Watts)	Frequency of power output stage (kHz)	Efficiency (%)
EA2506	11 – 50	5 – 30	6	300	50	97
Control Inputs						
Hall input signals A, B, C			TTL / +5 VDC; Ri = 1 kOhm			
Set v (Set value)			0 to +10 VDC; Ri = 100 kOhm			
/En (/Enable)			TTL / +24 VDC; Ri >= 4.7 kOhm			
Dir (Direction)			TTL / +24 VDC; Ri >= 4.7 kOhm			
/Br (/Brake)			TTL / +24 VDC; Ri >= 4.7 kOhm			
Switches						
Set value			Extern / Intern			
Operation mode			Speed / Torque			
Speed loop time			Fast / Slow			
Enable intern			Off / On			
Outputs						
Auxiliary voltage sources +5V			+5 VDC / 20 mA each			
Auxiliary voltage source			+10 VDC / 10 mA			
Current Monitor			0.75 V / A; Ri = 1 kOhm			
Error Output /Err			Open Collector / Push Pull / TTL / 24 VDC; Ri = 50 Ohm			
Display						
LEDs			green = Power / red = Error			
Potentiometers						
Function of Potentiometer			Speed; n max; Imax; Ramp			
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 hall			Torque-control			

Available Accessories for EA25 (details see page 48)

Patch Cable	Choke Module	DIN Rail mounting kit	Break Out Board
			

EA27 : Electrocraft CompletePower™ | Speed Control

Power Supply Voltage (VDC)	Nominal Current (A-Pk of Sine)	Quadrants	Operation Mode		
			Torque Control	Speed Control by Hall Sensor	Speed Control by Digital Encoder
11 – 70	8 / 16	2		●	

For BLDC Motors. Up to 1680W.

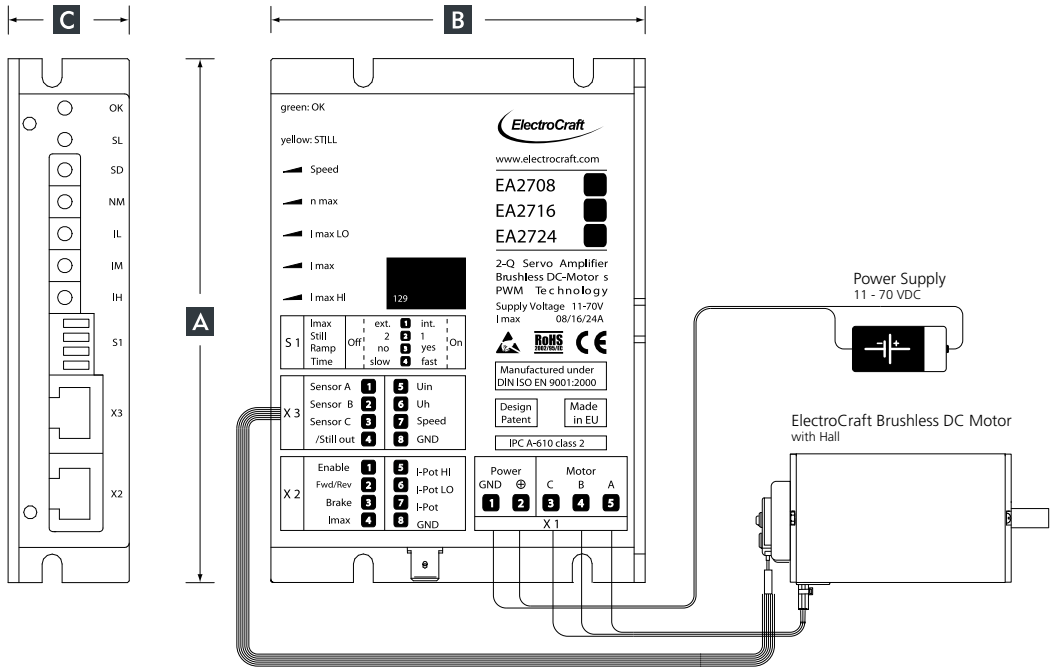
This two-quadrant brushless DC speed control is fully enclosed in a small rugged aluminum case which can be DIN-rail mounted or panel mounted for easy integration. The drive includes a ramp generator for controlled acceleration, braking function and external current control. Mode of operation is set by simple DIP switches. Either the 8 A or 16 A versions of this drive can be powered by the same 11 – 70 VDC range of supply voltage. The drive is protected against over-current, over-temperature and motor short-circuit and incorporates state of the art MOSFET technology for maximum efficiency. Connectivity is tool-free with RJ-45-CATs connectors for control/feedback inputs and push-type terminals for supply power and motor connections.

Drive Model Example

E	A	2	7	08
Drive Technology	Version	# Quadrants	Voltage 10x VDC	Current Amps

EA27 Outline Drawing

Model	A	B	C	Weight oz (g)
	Length in (mm)	Width in (mm)	Height in (mm)	
EA2708	4.69 (120)	3.35 (85)	1.08 (27.5)	7.40 (210)
EA2716				



EA27 Specifications						
Model Number	Power Supply Voltage (VDC)	Aux. Voltage Uin (VDC)	Nominal Current (A - Pk of Sine)	Max. Power with Heatsink (Watts)	Frequency of power output stage (kHz)	Efficiency (%)
EA2708	11 – 70	5 – 30	8	560	20	95
EA2716			16	1120		
Control Inputs						
Enable				TTL / +24 VDC; Ri = 4.7 kOhm		
Fwd/Rev				TTL / +24 VDC; Ri = 4.7 kOhm		
Brake				TTL / +24 VDC; Ri = 4.7 kOhm		
Hall input signals A, B, C				TTL / +6 VDC; Ri = 22 kOhm		
Speed				0 to +5 VDC; Ri = 100 kOhm		
Imax				Analog 0 to +10 VDC; Ri = 100 kOhm		
I-Pot HI; I-Pot; I-Pot LO				100 kOhm potentiometer		
Switches						
Imax				Extern / Intern		
Still				High / Low		
Ramp				No / Yes		
Time				Slow / Fast		
Outputs						
Auxiliary Voltage Source *Uh*				+6 VDC / 20 mA		
Rotate / Still				Open Collector / Push Pull / TTL / +24 VDC / Ri = 50 kOhm		
Display						
LEDs				green= OK / yellow = Still		
Potentiometers						
Function of Potentiometer's				Speed; n max; I max LO; I max; I max HI;		
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 hall sensors						

Available Accessories for EA27 (details see page 48)

Patch Cable	Passive heatsink	Active heatsink	Active heatsink	Choke module	DIN Rail mounting kit	Break Out Board
						

EA47 : Electrocraft CompletePower™ | Servo Amplifier

Power Supply Voltage (VDC)	Nominal Current (A-Pk of Sine)	Quadrants	Operation Mode		
			Torque Control	Speed Control by Hall Sensor	Speed Control by Digital Encoder
9 – 70	9 / 18	4	●	●	●

For BLDC Motors. Up to 1260W.

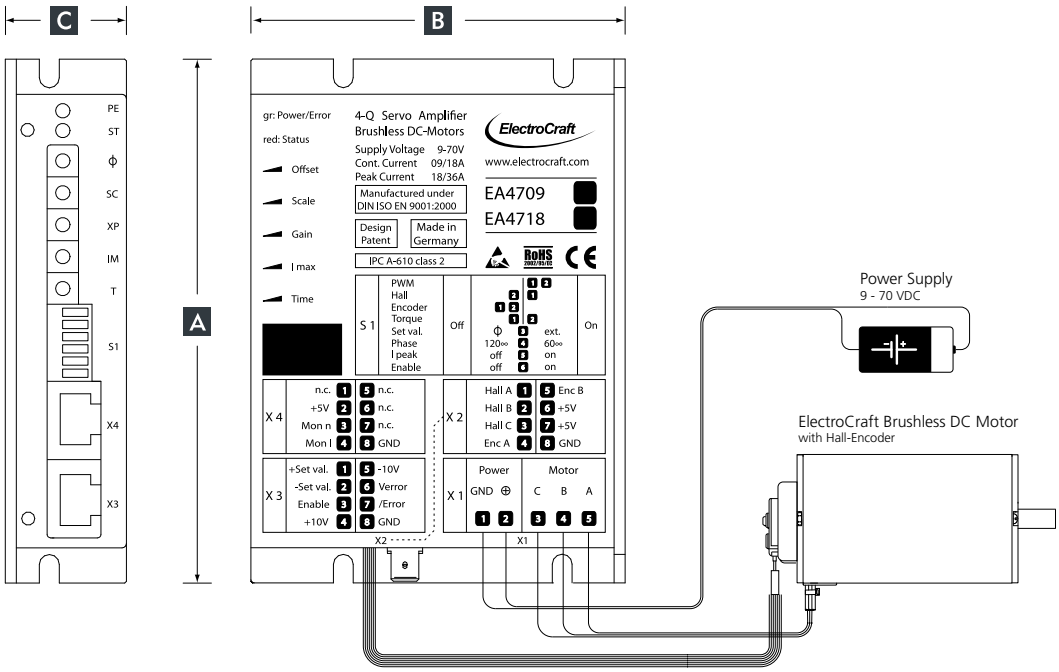
This four-quadrant brushless DC servo amplifier is fully enclosed in a small rugged aluminum case which can be DIN-rail mounted or panel mounted for easy integration. The drive can be configured in a variety of torque and speed control modes with the mode of operation being set by simple DIP switches. Both the 9 A and 18 A versions of this drive have an adjustable current limit, peak current time and ramp function and can be powered by the same 9 – 70 VDC range of supply voltage. The drive is protected against over-current and over-temperature and motor short-circuit and incorporates state of the art MOSFET technology for maximum efficiency. Connectivity is tool-free with RJ-45-CATs connectors for control/feedback inputs and push-type terminals for supply power and motor connections.

Drive Model Example

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

EA47 Outline Drawing

Model	A	B	C	Weight oz (g)
	Length in (mm)	Width in (mm)	Height in (mm)	
EA4709	4.69 (120)	3.35 (85)	1.08 (27.5)	7.40 (210)
EA4718				



EA47 Specifications

Model Number	Power Supply Voltage (VDC)	Aux. Voltage Verror (VDC)	Nominal Current (A - Pk of Sine)	Peak current (A - Pk of Sine)	Max. Power with Heatsink (Watts)	Frequency of power output stage (kHz)	Efficiency (%)
EA4709	9 – 70	5 – 30	9	18	630	50	97
EA4718			18	36	1260		

Control Inputs	
Encoder input signals	Channel A, B; TTL / +5 VDC; max. 78 kHz; Ri = 1 kOhm
Hall input signals A, B, C	TTL / +5 VDC; Ri = 1 kOhm
Set value	-10 to +10 VDC; Ri = 20 kOhm
Enable	TTL / +24 VDC; Ri = 10 kOhm

Switches	
PWM-, Hall-, Enc.-, Torque-Mode	Not set / Set
Set value via Offset	Offset / ext
Phase	120° / 60°
Ipeak	on / off
Enable	on / off

Outputs	
Auxiliary voltage sources +5V	+5 VDC / 50 mA each
Auxiliary voltage sources	±10 VDC / 10 mA
Current Monitor *Mon I*	1 / 0.5 (V/A); Ri = 200 Ohm
Speed Monitor *Mon n*	max.10 V at n max
Error	Open Collector / Push Pull / TTL / +24 V

Display	
LEDs	green = Power / red = Error

Potentiometer	
Function of Potentiometer	Offset; Scale; Gain; I max; Time

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			
PWM-commutation amplifier	Speed-control by hall	Speed-control by encoder	Torque-control

Available Accessories for EA47 (details see page 48)

Braking module	Patch Cable	Passive heatsink	Active heatsink	Active heatsink	Choke module	DIN Rail mounting kit	Break Out Board
							

SCA-B4 : Electrocraft CompletePower™ | Servo Amplifier

Power Supply Voltage (VDC)	Nominal Current (A-Pk of Sine)	Quadrants	Operation Mode		
			Torque Control	Speed Control by Hall Sensor	Speed Control by Digital Encoder
11 – 70	10 / 30	4	●	●	●

For BLDC Motors. Up to 2100W.

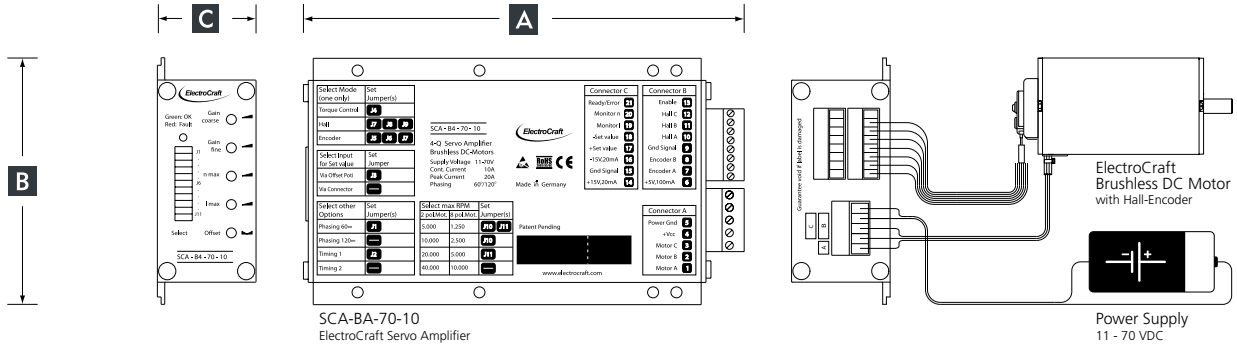
This four-quadrant brushless DC servo amplifier is fully enclosed in a rugged aluminum case which can be panel mounted or DIN-rail mounted for easy integration. The drive can be configured in a variety of torque and speed control modes with the mode of operation being set by simple jumpers. Both the 10 A and 30 A versions of this drive have an adjustable current limit and can be powered by the same 11 – 70 VDC range of supply voltage. The drive is protected against over-current and over-temperature and 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

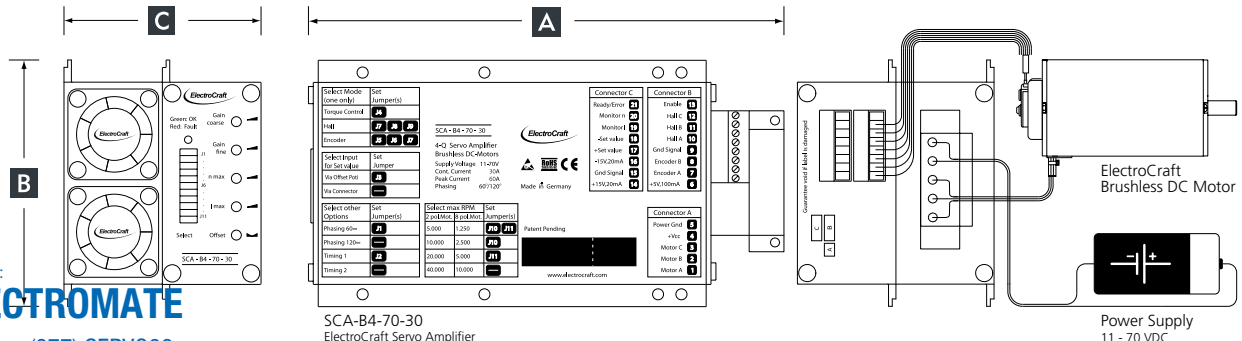
SC	A	B4	70	10
Drive Technology	Case Type	# Quadrants	Voltage VDC	Current Amps

SCA-B4 Outline Drawing

Model	A	B	C	Weight oz (g)
	Length in (mm)	Width in (mm)	Height in (mm)	
SCA-B4-70-10	7.09 (180)	3.94 (100)	1.57 (40)	20.46 (580)
SCA-B4-70-30	7.87 (200)		3.14 (80)	40.57 (1150)



SCA-BA-70-10
ElectroCraft Servo Amplifier



SCA-B4-70-30
ElectroCraft Servo Amplifier

SCA-B4 Specifications						
Model Number	Power Supply Voltage (VDC)	Nominal Current (A - Pk of Sine)	Peak Current (A - Pk of Sine)	Max. Power with Heatsink (Watts)	Frequency of power output stage (kHz)	Efficiency (%)
SCA-B4-70-10	11 – 70	10	20	700	49	95
SCA-B4-70-30		30	60	2100		

Control Inputs	
Encoder input signals	Channel A, B; TTL / +5 VDC; max. 100 kHz; Ri = 1 kOhm
Hall input signals A, B, C	TLL / +5 VDC; Ri = 1 kOhm
Set value	-10 to +10 VDC; Ri = 200 kOhm
Enable	8 to 30 VDC; Ri = 4.7 kOhm

Jumpers	
Hall-, Enc.-, Torque mode	Not set / Set
Set value via Offset	Offset / Ext
Phase	60° / 120°
Commutation Timing	1 / 2
Max Speed Range	1/8, 1/4, 1/2, Full

Outputs	
Auxiliary voltage source +5V	+5 VDC / 100 mA
Auxiliary voltage sources	±15 VDC / 20 mA
Current monitor Monitor I	0.5 / 0.16 (V/A); Ri = 10 kOhm
Speed monitor Monitor n	10 VDC at max. speed; Ri = 10 kOhm
Error	Open Collector max. +30 VDC; 20 mA

Display	
2-colour-LED	green = OK / red = Fault

Potentiometer	
Function of Potentiometer	Gain coarse; Gain fine; n max; I max; 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		
Speed-control by hall sensors	Speed-control by encoder	Torque-control

Available Accessories for SCA-B4 (details see page 48)		
Braking module	Aluminium Din Rail kit	Choke module
		

SC

SCO-B1 : Electrocraft CompletePower™ | Speed Control

Power Supply Voltage (VDC)	Nominal Current (A-Pk of Sine)	Quadrants	Operation Mode		
			Torque Control	Speed Control by Hall Sensor	Speed Control by Digital Encoder
20 – 60	18 / 40	2		●	

For BLDC Motors. Up to 2000W.

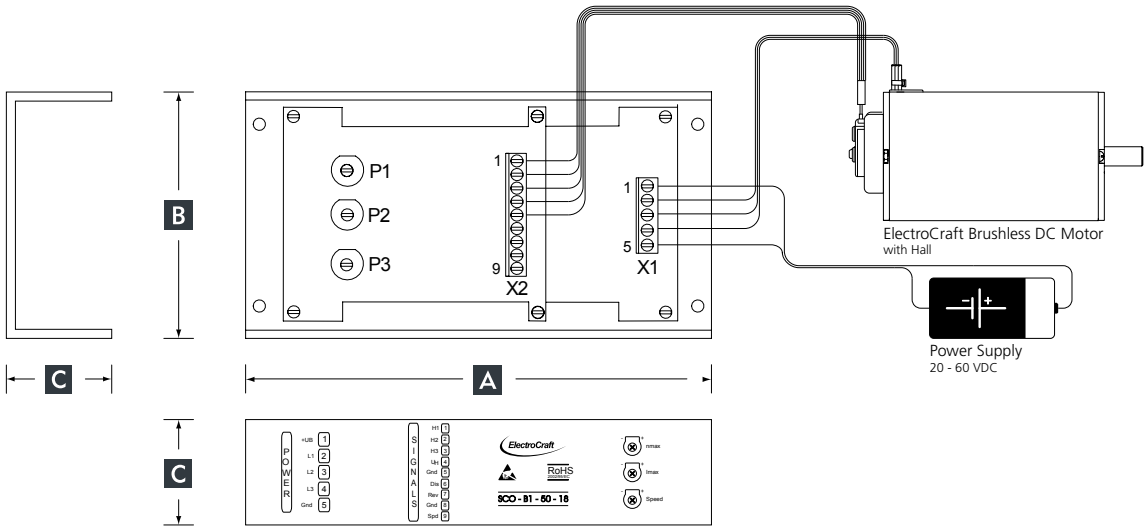
This two-quadrant brushless DC speed control is housed in a compact open-frame aluminum module which can be panel mounted for easy integration. The drive includes a control enable/disable, direction and set value inputs. Both the 18 A and the 40 A versions of this drive have an adjustable current limit and can be powered by the same 20 – 50 VDC range of supply voltage. The 18 A version of this drive is also available for supply voltages range from 30 - 60 VDC. The drive is protected against over-current and over-temperature 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	O	B1	50	18
Drive Technology	Case Type	# Quadrants	Voltage VDC	Current Amps

SCO-B1 Outline Drawing

Model	A	B	C	Weight oz (g)
	Length in (mm)	Width in (mm)	Height in (mm)	
SCO-B1-50-18	6.69 (170)	3.54 (90)	1.77 (45)	13.40 (380)
SCO-B1-50-40				14.11 (400)
SCO-B1-60-18				13.40 (380)



SCO-B1 Specifications					
Model Number	Power Supply Voltage (VDC)	Nominal Current (A - Pk of Sine)	Max. Power with Heatsink (Watts)	Frequency of power output stage (kHz)	Efficiency (%)
SCO-B1-50-18	20 – 50	18	900	20	95
SCO-B1-50-40	20 – 50	40	2000		
SCO-B1-60-18	30 – 60	18	1080		

Control Inputs	
Hall input signals H1, H2, H3	TTL / +6 VDC; Ri = 1kOhm
Set value	0 to +5 VDC; Ri > 100 kOhm
Disable	Open Collector / TTL / CMOS / Switch
Reverse	Open Collector / TTL / CMOS / Switch
Outputs	
Auxiliary voltage source for hall sensors	+6 VDC / 20 mA
Function of Potentiometers	
Motor Speed	Speed
Current maximum	Imax
Speed maximum	nmax
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 hall sensors	

Available Accessories for SCO-B1 (details see page 48)

Choke module

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

SCP-B1 : Electrocraft CompletePower™ | Speed Control

Power Supply Voltage (VDC)	Nominal Current (A-Pk of Sine)	Quadrants	Operation Mode		
			Torque Control	Speed Control by Hall Sensor	Speed Control by Digital Encoder
12 – 40	5 / 10	2		●	

For BLDC Motors. Up to 475W.

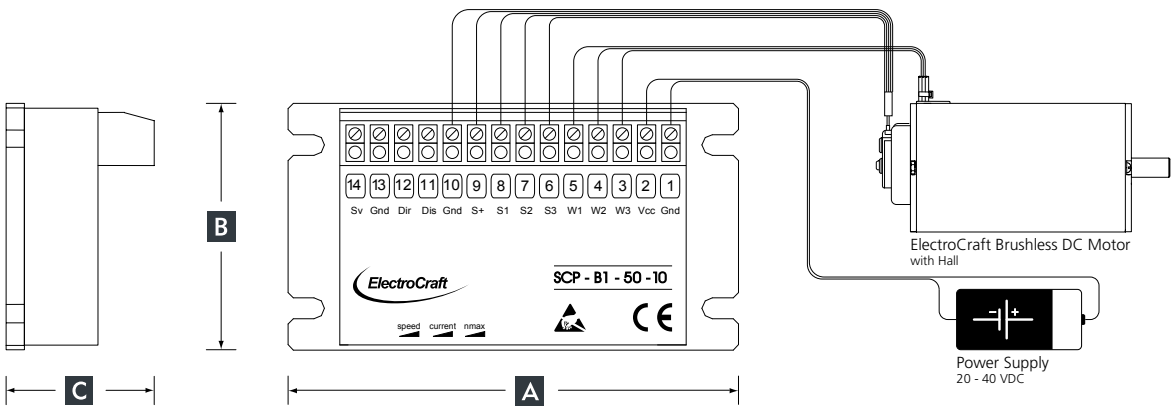
This two-quadrant brushless DC speed control is housed in a compact closed-frame aluminum module which can be panel mounted for easy integration. The drive includes a control enable/disable, direction and set value inputs. The drive incorporated an adjustable current limit and is available in a variety of voltage up to 50 V and two current configurations with 5 A and 10 A to meet the exact needs of your application. The drive is protected against over-current and over-temperature 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	P	B1	40	05
Drive Technology	Case Type	# Quadrants	Voltage VDC	Current Amps

SCP-B1 Outline Drawing

Model	A	B	C	Weight oz (g)
	Length in (mm)	Width in (mm)	Height in (mm)	
SCP-B1-50-10	3.70 (94)	2.16 (55)	1.54 (39)	4.94 (140)



SCP-B1 Specifications					
Model Number	Power Supply Voltage (VDC)	Nominal Current (A - Pk of Sine)	Max. Power with Heatsink (Watts)	Frequency of power output stage (kHz)	Efficiency (%)
SCP-B1-50-10	20 – 50	10	475	20	95

Control Inputs	
Hall input signals S1, S2, S3	TTL / +6 VDC; Ri = 1kOhm
Set value	0 to +10 VDC; Ri > 100 kOhm
Disable	Open Collector / TTL / CMOS / Switch
Direction	Open Collector / TTL / CMOS / Switch
Outputs	
Auxiliary voltage source for hall sensors	+6 VDC / 20 mA
Function of Potentiometers	
Motor Speed	speed
Current maximum	current
Speed maximum	nmax
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 hall sensors	

Available Accessories for SCP-B1 (details see page 48)

Choke module

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Don't see exactly what you need?
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ACS-Series : ElectroCraft CompletePower™ Plus | Digital Servo Amplifier

Power Supply Voltage (VDC)	Nominal Current (A_{rms})	Quadrants	Operation Mode					
			Torque Control	Speed Control by Hall Sensor	Speed Control by Encoder	Step and Direction	PWM	Position
24 – 48	3.5 / 5 / 10.6	4	●	●	●	●	●	●

Low Voltage, Small Package ... World Class Intelligence

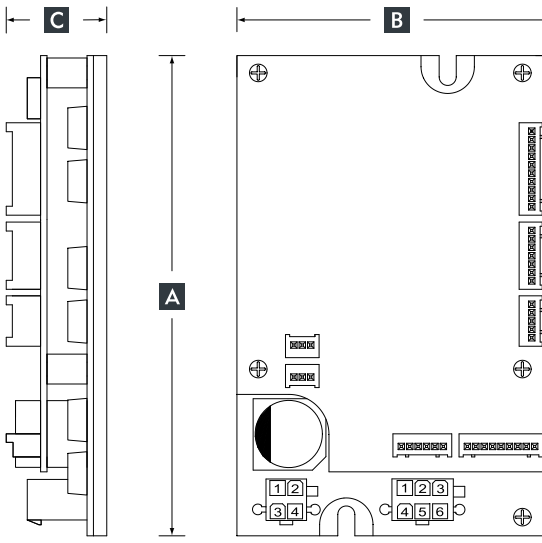
The ACS-Series is the newest addition to ElectroCraft's "Plus" series of all digital servo-amplifiers designed to provide today's OEM with maximum brushless servo performance at the lowest possible cost. The ACS-Series utilizes the latest in DSP-based digital drive design architecture to provide software selectable torque, velocity, and position mode operation. Sine wave commutation using encoder feedback provides smooth torque at low speed for demanding motion control requirements found in robotic, direct drive, and linear motor applications. Sine wave commutation is also available on motors operating with only hall commutation feedback, providing smooth performance over the entire speed and torque range.

Drive Model Example

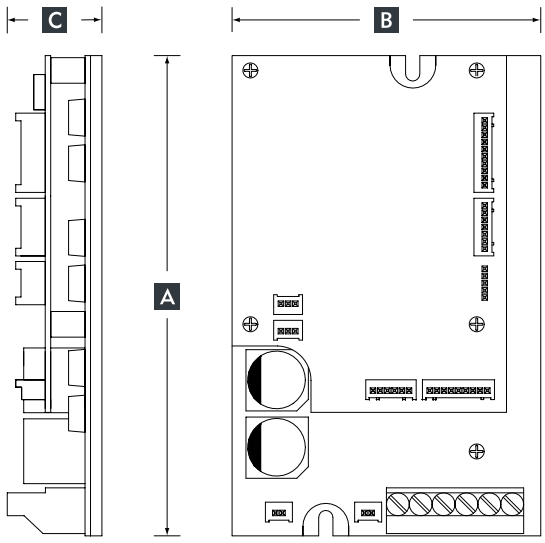
ACS — Drive Technology
100 — Power Rating
0599 — Configuration

ACS100/200/300 Outline Drawing

Model	A	B	C	Weight oz (g)
	Length in (mm)	Width in (mm)	Height in (mm)	
ACS100-0599	4.5 (114)	3.0 (76)	0.942 (24)	6.5 (184)
ACS200-0610	4.5 (114)	3.0 (76)	0.942 (24)	6.5 (184)
ACS300-0605	5.25 (133)	3.38 (86)	1.03 (26)	7.8 (222)



ACS100 & ACS200



ACS300

Mating connector kit not included with unit. Cable/interface kits sold separately.

ACS-Series Specifications						
Model Number	Power Supply Voltage (VDC)	Logic Supply Voltage (VDC)	Nominal Current (A_{rms})	Peak Current (A_{rms})	Max. Power (Watts)	Frequency of power output stage (kHz)
ACS100-0599	24 – 48	24 – 48	3.5	7	168	40
ACS200-0610			5	10	240	
ACS300-0605			10.6	20	510	
Control Inputs						
Encoder Input Signals			Differential / TTL / +5 VDC / 2MHz			
Hall Input Signals			TTL / +5 VDC			
Velocity / Torque Reference (Command)			Differential / ±10 VDC			
Aux. Analog Input			Differential / ±10 VDC			
Step and Direction			TTL / 5 VDC / 2 MHz			
Enable /Reset			TTL / +5 VDC			
Run / Standby			TTL / +5 VDC			
Outputs						
+5 VDC Interface Power			+5 VDC / 250 mA			
Enabled			TTL / +5 VDC			
Ready / Fault			TTL / +5 VDC			
Performance						
Current Loop			10 bit / Digitally adjustabel up to 5 kHz			
Velocity PID Loop			32 bit / Digitally adjustabel up to 10 kHz			
Position PID Loop			32 bit / Digitally adjustabel up to 10 kHz			
Display						
Status / Fault LED			Yellow - Flash Code Sequence			
Power LED			Green - Logic supply On			
Communications						
Serial			RS232 ElectroCraft CompletePower™ Plus Windows® Set-up Utility			
CAN Bus			CAN Read / Write			
Ambient conditions						
Operation temperature (°C)			0 to +50 Standard Extended temperature range available			
Storage temperature (°C)			-20 to +85			
Humidity Range Not Condensing (%rel)			5 to 95% rel.			
Regulatory Compliance						
CE			RoHS			

Available Accessories for ACS-Series (details see page 48)

Connector Interface Board	Cover	External Shunt Kit	Quick Start I/O Kit	Cable Kit
				

ACE500 : ElectroCraft CompletePower™ Plus | Digital Servo Amplifier

Power Supply Voltage (VAC)	Nominal Current (A_{rms})	Quadrants	Operation Mode					
			Torque Control	Speed Control by Hall Sensor	Speed Control by Encoder	Step and Direction	PWM	Position
90 – 254	5	4	●	●	●	●	●	●

High Voltage, Small Package ... World Class Intelligence

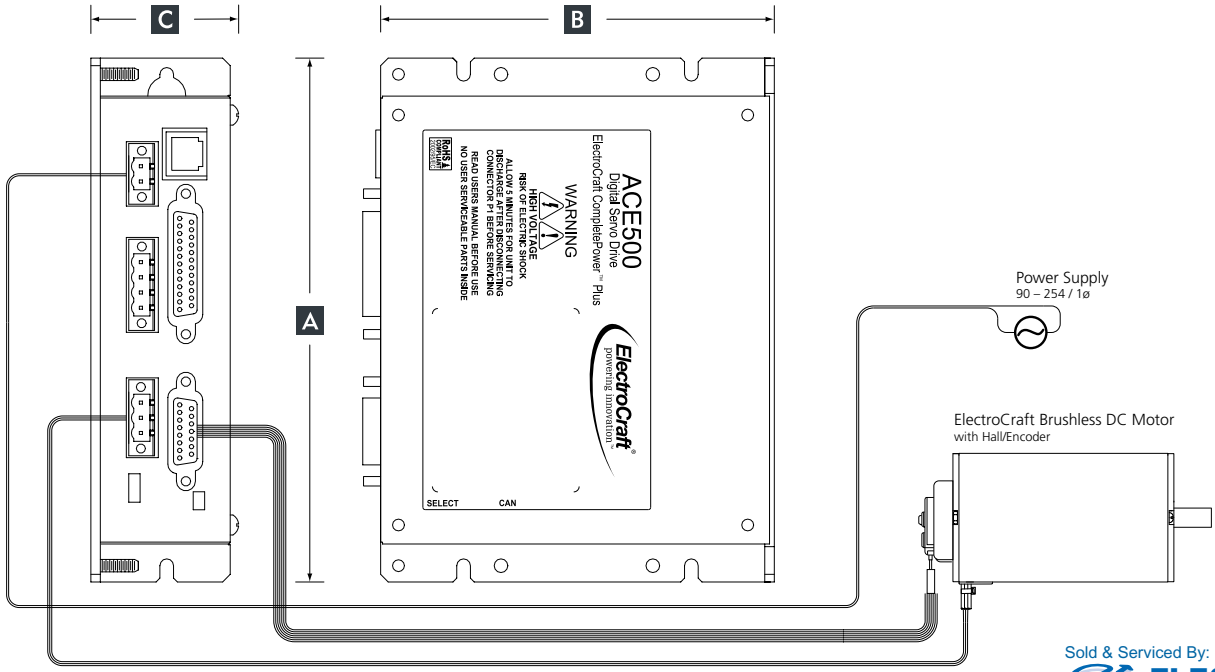
The line powered ACE500 is the newest addition to ElectroCraft's "Plus" series of all digital servo-amplifiers designed to provide today's OEM with maximum brushless servo performance at the lowest possible cost. The ACE500 series utilizes the latest in DSP-based drive design architecture to provide software selectable torque, velocity, and position mode (Step & Direction) operation. Sine wave commutation using encoder feedback provides smooth torque at low speeds for demanding motion control requirements found in robotic, direct drive, and linear motor applications. Sine wave commutation is also available on motors operating with only hall commutation feedback, providing smooth performance over the entire speed and torque range.

Drive Model Example

ACE	50	0
Drive Technology	Power Rating	Configuration

ACE500 Outline Drawing

Model	A	B	C	Weight oz (g)
	Length in (mm)	Width in (mm)	Height in (mm)	
ACE500-010-0000	6.9 (175)	5.2 (132)	1.945 (50)	30 (862)



Mating connector kit included with unit. Cable/interface kits sold separately.

ACE500 Specifications						
Model Number	Power Supply Voltage (VAC)	Logic Supply Voltage (VDC)	Nominal Current (A_{rms})	Peak Current (A_{rms})	Max. Power w/o Heatsink (Watts)	Frequency of power output stage (kHz)
ACE500-010-0000	90 – 254 / 1ø	+5 VDC (User Supplied)	5	11	1625	30
Control Inputs						
Encoder Input Signals			Differential / TTL / +5 VDC / 2MHz			
Hall Input Signals			TTL / +5 VDC			
Velocity / Torque Reference (Command)			Differential / ±10 VDC			
Aux. Analog Input			Differential / ±10 VDC			
Step and Direction			TTL / 5 VDC / 2 MHz			
Enable / Reset			TTL / +5 VDC			
Run / Standby			TTL / +5 VDC			
Dynamic Brake			TTL / +5 VDC			
Outputs						
+5 VDC Interface Power			+5 VDC / (User Supplied)			
Enabled			TTL / +5 VDC			
Fault			TTL / +5 VDC			
Tachometer (Digital)			Hall Edge Transition - Pulse Generator / TTL +5VDC			
Performance						
Current Loop			10 bit / Digitally adjustable up to 5 kHz			
Velocity PID Loop			32 bit / Digitally adjustable up to 10 kHz			
Position PID Loop			32 bit / Digitally adjustable up to 10 kHz			
Display						
Power-Motor LED			Green - On / Off			
Power-Logic LED			Green - On / Off			
Shunt Status LED			Yellow - On / Off			
Current Limit LED			Red - On / Off			
Status / Fault LED			Yellow / Flash Code Sequence			
Communications						
Serial			RS232 ElectroCraft CompletePower™ Plus Windows® Set-up Utility			
Ambient conditions						
Operation temperature (°C)			0 to +50			
Storage temperature (°C)			-20 to +85			
Humidity Range Not Condensing (%rel)			5 to 95% rel.			
Regulatory Compliance						
Safety			EN60950 / UL1950 / CSA22.2.14			
CE			Low Voltage Directive / RoHS			

Available Accessories for ACE500 (details see page 48)

Dual Encoder Out Board	Resolver Convertor Board	Quick-Start I/O Kit	External Shunt Kit
			

ACE1000 : ElectroCraft CompletePower™ Plus | Digital Servo Amplifier

Power Supply Voltage (VAC)	Nominal Current (A_{rms})	Quadrants	Operation Mode					
			Torque Control	Speed Control by Hall Sensor	Speed Control by Encoder	Step and Direction	PWM	Position
90 – 254	8 / 12	4	●	●	●		●	●

High Voltage, Small Package ... World Class Intelligence

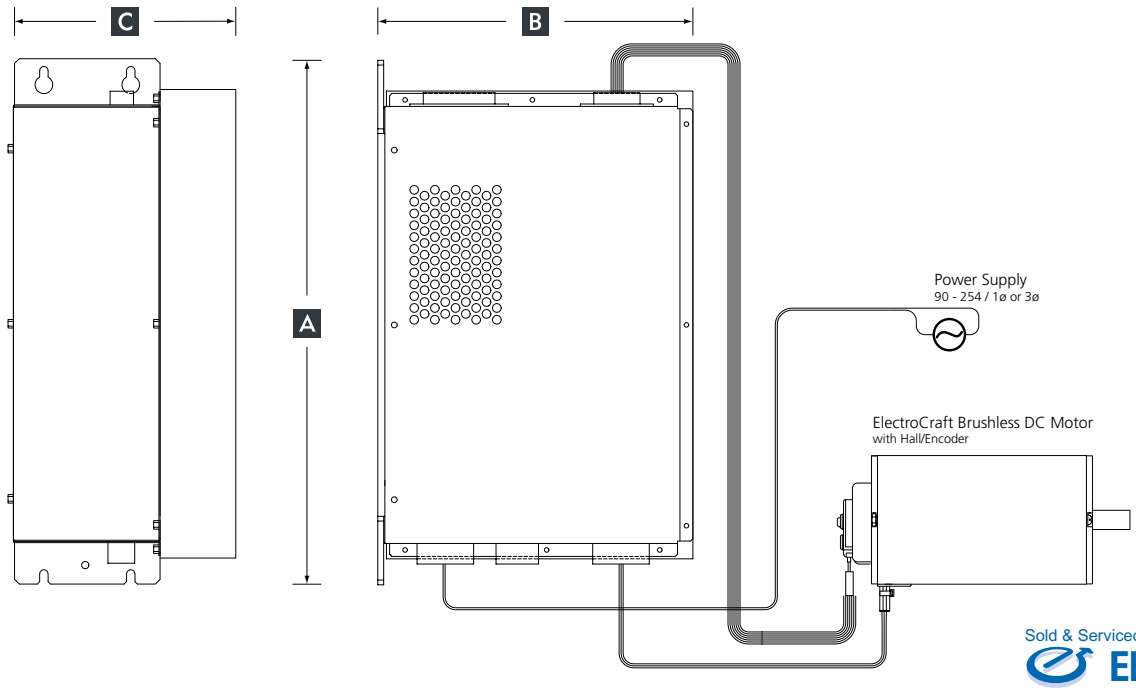
The line powered ACE1000 Series is the newest addition to ElectroCraft's "Plus" series of all digital servo-amplifiers designed to provide today's OEM with maximum brushless servo performance at the lowest possible cost. The ACE1000 Series utilizes the latest in DSP-based drive design architecture to provide software select-able torque, velocity, and position mode (optional) operation. Sine wave commutation using encoder feedback provides smooth torque at low speeds for demanding motion control requirements found in robotic, direct drive, and linear motor applications. Sine wave commutation is also available on motors operating with only hall commutation feedback, providing smooth performance over the entire speed and torque range.

Drive Model Example

ACE	120	0
Drive Technology	Power Rating	Line Phase

ACE1000 Outline Drawing

Model	A	B	C	Weight oz (g)
	Length in (mm)	Width in (mm)	Height in (mm)	
ACE1200	11.1 (282)	6.68 (170)	4.70 (119)	94 (2,676)
ACE1300				



Mating connector kit included with unit. Cable/interface kits sold separately.

ACE1000-Series Specifications						
Model Number	Motor Supply Voltage (VAC)	Logic Supply Voltage (VDC)	Nominal Current (A_{rms})	Peak Current (A_{rms})	Max. Power with Heatsink (Watts)	Frequency of power output stage (kHz)
ACE1200-111-2221*	90 – 254 / 1ø	+5 VDC (User Supplied)	8	14	2275	30
ACE1300-111-2221*			12	21	4550	
ACE1202-111-2221*	90 – 254 / 3ø		8	14	2275	
ACE1302-111-2221*			12	21	4550	
Control Inputs						
Encoder Input Signals			Differential / TTL / +5 VDC / 2MHz			
Hall Input Signals			TTL / +5 VDC			
Velocity / Torque Reference (Command)			Differential / ±10 VDC			
Aux. Analog Input			0 to +10 VDC			
Enable /Reset			TTL / +5 VDC			
Run / Standby			TTL / +5 VDC			
Dynamic Brake			TTL / +5 VDC			
Outputs						
+5 VDC Interface Power			+5 VDC / (User Supplied)			
Fault			TTL / +5 VDC			
Motor Over Temperature			TTL / +5 VDC			
Tachometer (Digital)			Hall Edge Transition - Pulse Generator / TTL +5VDC			
Performance						
Current Loop			10 bit / Digitally adjustable up to 5 kHz			
Velocity PID Loop			32 bit / Digitally adjustable up to 10 kHz			
Position PID Loop			32 bit / Digitally adjustable up to 10 kHz			
Display						
Power-Motor LED			Green - On / Off			
Power-Logic LED			Green - On / Off			
Shunt Status LED			Yellow - On / Off			
Current Limit LED			Red - On / Off			
Status / Fault LED			Yellow / Flash Code Sequence			
Communications						
Serial			RS232 ElectroCraft CompletePower™ Plus Windows® Set-up Utility			
Ambient conditions						
Operation temperature (°C)			0 to +50			
Storage temperature (°C)			-20 to +85			
Humidity Range Not Condensing (%rel)			5 to 95% rel.			
Regulatory Compliance						
Safety			EN60950 / UL1950 / CSA22.2.14			
CE			Low Voltage Directive			

Available Accessories for ACE1000-Series (details see page 48)	Resolver Convertor Board	Quick Start I/O Kit	External Shunt Kit
			

* Velocity control using encoder feedback. Contact your ElectroCraft representative for order information using hall only operation.

PFC3000 | Power Factor Correction Module

Power Supply Voltage (VAC)	Nominal Power (kW)
185 – 240	2.4

Power Correction for High Power Applications

Power Factor Correction (PFC) is required in any motion control application demanding optimum utilization of available line currents and/or minimum line current distortion. Power factor correction (PFC) is required in any motion control application demanding optimum utilization of available line currents and/or minimum line current distortion. An ElectroCraft PFC3000 module can give the system more power without increasing line capacity and offers reliable operation while reducing peak AC current input needs. The ElectroCraft module attenuates AC line harmonics induced by switching power amplifiers and prevents overloading of neutral conductors and transformers.

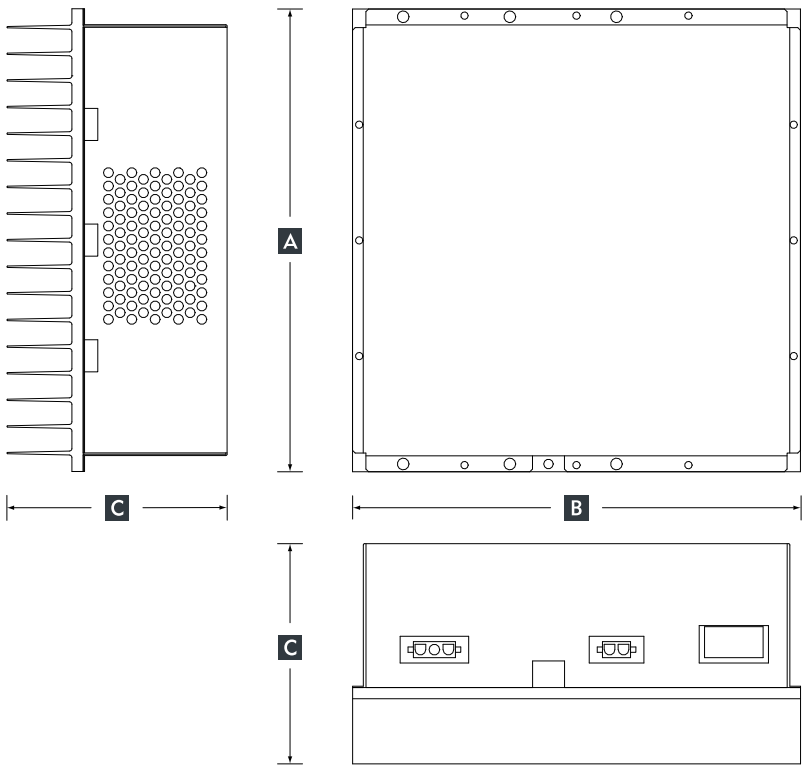
PFC Model Number Example

PFC 3001 — 400 — 1 01 2

- 400: Voltage Output
- 1: Cover
- 01: Connector
- 2: Configuration

PFC3000 Outline Drawing

Model	A Length in (mm)	B Width in (mm)	C Height in (mm)	Weight oz (g)
PFC3001-400	11.1 (282)	8.40 (213)	4.13 (105)	121 (3,429)



Mating connector kit included with unit.

PFC3000 Specifications						
Model Number	Input Voltage (VAC)	Output Voltage (VDC)	Logic Supply Voltage (VDC)	Nominal Current (Amps)	Peak Current (Amps)	Max Power (kW)
PFC3001-400-1012	185 – 240 / 1ø	395 – 420 (Regulated)	+5 VDC (User Supplied)	6	8.5	3.5
Performance						
Power Factor			> .99 at full load			
Efficiency			100 Watts loss at full load			
Fault Conditions						
Loss of Regulation						
Loss of Logic Power						
Over / Under Voltage						
Communications						
I^2C						
Ambient conditions						
Operation temperature (°C)			0 to +50			
Storage temperature (°C)			-20 to +85			
Humidity Range Not Condensing (%rel)			5 to 95% rel.			
Regulatory Compliance						
Safety			EN60950 / IEC950 / UL1950 / CSA234			
Power Harmonics			EN61000-3-2			

PFC

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ELECTROCRAFT PRO SERIES

Precision positioning allows microscopic inspection and analysis

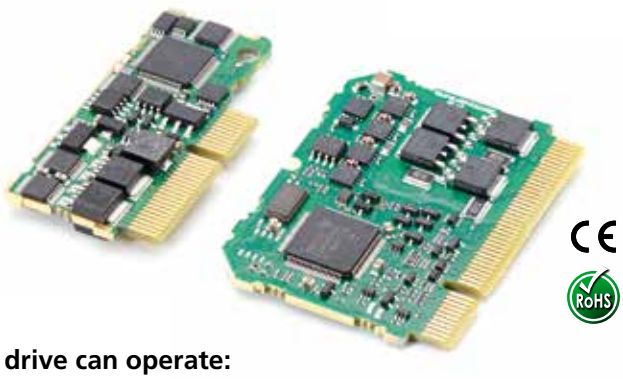
Coordinated motion helps advance medical diagnostics

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.

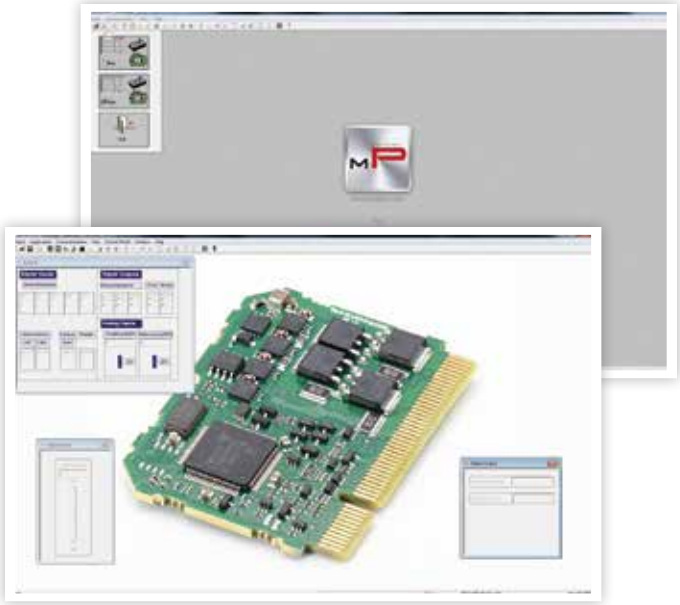


The drive can operate:

- 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.

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, I^2t

PRO-A04V36: PRO Series | Programmable Servo Drive

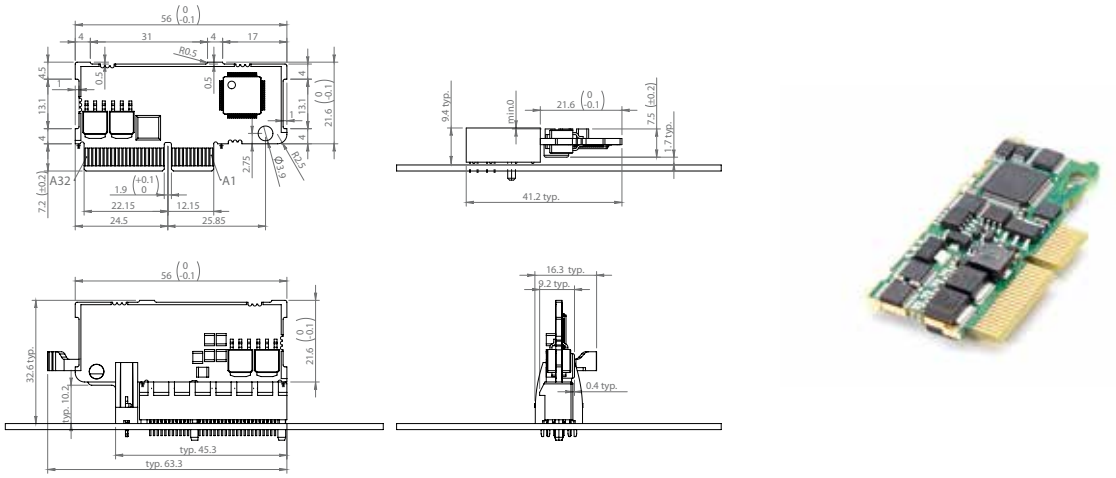
Drive Model Example

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
PRO	A	04	36	A	PE = PCB Mount SA = Stand Alone	CAN

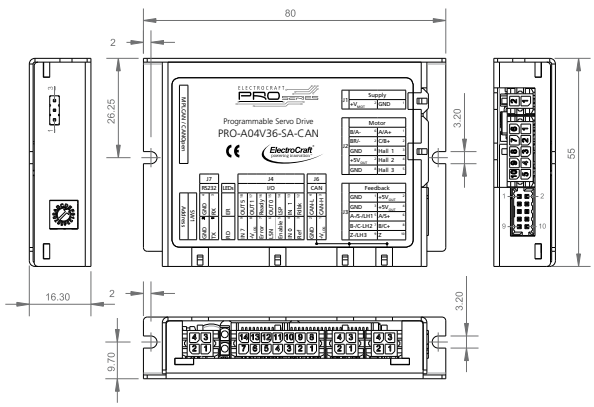
PCB Mount PRO-A04V36x-PE-CAN Outline Drawing

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}
	Absolut 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 (sinusoidal amplitude RMS 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

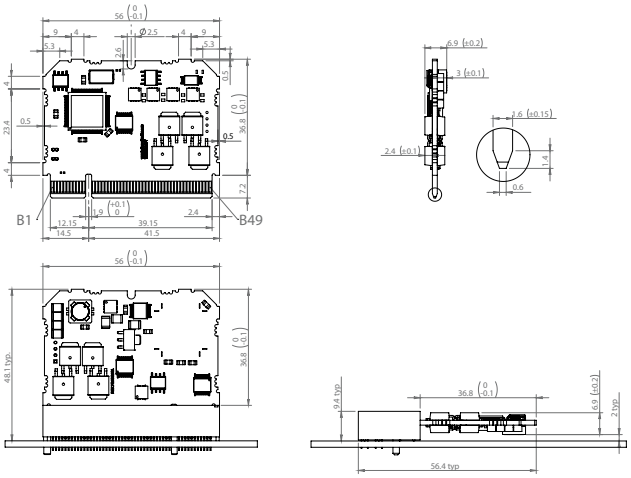
Drive Model Example

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
PRO	A	08	48	A	PE = PCB Mount SA = Stand Alone	CAN

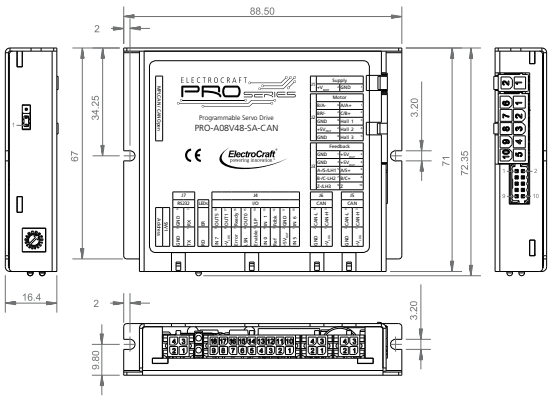
PCB Mount PRO-A08V48x-PE-CANOutline Drawing

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		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}
	Absolut 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 (sinusoidal amplitude RMS 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

System Matrix – Matching Motor and Drive Combinations

Motor Series			BLDC Drive Models																		
	Motor P/N		CompletePower										CompletePower Plus						PRO Series	
			2 Quadrant							4 Quadrant				4 Quadrant					4 Quadrant.	
			DC Input Power							DC Input Power				DC Input Power			AC Input Power			DC Input Power	
	Imperial	Metric	EA2506	EA2708	EA2716	SCO-B1-50-18	SCO-B1-50-40	SCO-B1-60-18	SCP-B1-50-10	EA4709	EA4718	SCA-B4-70-10	SCA-B4-70-30	ACS100	ACS200	ACS300	ACE500	ACE1200	ACE1300	PRO-A04V36	PRO-A08V48
RapidPower - RP	RP17-12V24	RP17M-8V24	●	●						●		●			●						●
	RP17-12V48	RP17M-8V48	●	●		●			●	●		●			●						●
	RP17-12V60	RP17M-8V60		●				●		●		●									
	RP17-22V24	RP17M-16V24	●	●						●		●			●						●
	RP17-22V48	RP17M-16V48	●	●		●			●	●		●			●						●
	RP17-22V60	RP17M-16V60		●				●		●		●									
	RP17-36V24	RP17M-25V24	●	●						●		●			●						●
	RP17-36V48	RP17M-25V48	●	●		●			●	●		●			●						●
	RP17-36V60	RP17M-25V60		●				●		●		●									
	RP17-45V24	RP17M-32V24	●	●						●		●			●						●
	RP17-45V48	RP17M-32V48	●	●		●			●	●		●			●						●
	RP17-45V60	RP17M-32V60		●				●		●		●									
	RP23-26V12	RP23M-18V12	●	●		●			●	●		●									●
	RP23-26V24	RP23M-18V24	●	●						●		●			●						●
	RP23-26V48	RP23M-18V48	●	●		●			●	●		●			●						●
	RP23-26V90	RP23M-18V90†																			
	RP23-34V12	RP23M-24V12			●	●			●	●		●									
	RP23-34V24	RP23M-24V24	●	●						●		●			●						●
	RP23-34V48	RP23M-24V48	●	●		●			●	●		●			●						●
	RP23-34V160	RP23M-24V160															●				
	RP23-54V12	RP23M-38V12			●	●			●	●		●									
	RP23-54V24	RP23M-38V24	●	●		●			●		●	●				●					⊛
	RP23-54V48	RP23M-38V48	●	●		●			●	●		●			●						●
	RP23-54V160	RP23M-38V160															●				
	RP23-73V24	RP23M-52V24			●	●			●		●		●								
	RP23-73V48	RP23M-52V48	●	●		●			●	●		●				●					⊛
	RP23-73V90	RP23M-52V90															○				
	RP23-73V160	RP23M-52V160															●				
	RP34-112V24	RP34M-79V24			●	●							●								
	RP34-112V48	RP34M-79V48		●		●			●		●		●			●					
	RP34-112V90	RP34M-79V90															○				
	RP34-112V160	RP34M-79V160															●				
	RP34-217V24	RP34M-153V24			●	●							●								
	RP34-217V48	RP34M-153V48		●		●			●		●		●			●					
	RP34-217V90	RP34M-153V90															○				
	RP34-217V160	RP34M-153V160															●				
	RP34-313V24	RP34M-221V24			●	●							●								
	RP34-313V48	RP34M-221V48		●		●			●		●	●				●					
	RP34-313V90	RP34M-221V90															○				
	RP34-313V160	RP34M-221V160															●				

○ Requires amplifier to be operated with DC input source

⊛ Drive will limit motor Peak torque performance

Motor Series			BLDC Drive Models																	
	Motor P/N		CompletePower										CompletePower Plus						PRO Series	
			2 Quadrant							4 Quadrant				4 Quadrant					4 Quadrant.	
			DC Input Power							DC Input Power				DC Input Power			AC Input Power			DC Input Power	
	Imperial	Metric	EA2506	EA2708	EA2716	SCO-B1-50-18	SCO-B1-50-40	SCO-B1-60-18	SCP-B1-50-10	EA4709	EA4718	SCA-B4-70-10	SCA-B4-70-30	ACS100	ACS200	ACS300	ACE500	ACE1200	ACE1300	PRO-A04V36	PRO-A08V48
RapidPower - RPP	RPP23-64V48	RPP23M-45V48	●	●		●			●	●		●			●						●
	RPP23-64V160	RPP23M-45V160															●				
	RPP23-64V325	RPP23M-45V325															●				
	RPP23--98V48	RPP23M-69V48	●	●		●			●	●		●				●					⊛
	RPP23--98V160	RPP23M-69V160															●				
	RPP23--98V325	RPP23M-69V325															●				
	RPP23-118V48	RPP23-83V48		●		●			●		●		●			●					
	RPP23-118V160	RPP23-83V160															●				
	RPP23-118V325	RPP23-83V325															●				
	RPP23-154V48	RPP23M-108V48			●	●			●		●		●								
	RPP23-154V160	RPP23M-108V160															●				
	RPP23-154V325	RPP23M-108V325															●				
	RPP34-142V160	RPP34-100V160																●			
	RPP34-142V325	RPP34-100V325															●				
	RPP34-284V160	RPP34-200V160																			
	RPP34-284V325	RPP34-200V325																●			
	RPP34-426V160	RPP34-300V160																			
	RPP34-426V325	RPP34-300V325																	●		
	RPP34-568V160	RPP34-400V160																			
	RPP34-568V325	RPP34-400V325																	●		

○ Requires amplifier to be operated with DC input source

⊛ Drive will limit motor Peak torque performance

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!

ElectroCraft®
powering innovation™

Other Products available from

ElectroCraft:

- CompletePower I Motion Control
- TorquePower I Steppers
- AxialPower I Linear Actuator
- DirectPower I PMDC
- 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.

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.

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.

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.

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.

DirectPower™ I PMDC

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

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. R P 2 3 — 7 3 V 2 4 — 1 0 0 — C

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

b. R P 2 3 M — 5 2 V 2 4 — 1 0 0 — C

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

Step 4: Brushless Motor Features

Rear Shaft	Front Shaft	Lead Option	Encoder Options (X = none)	
			Single Ended Encoder	Differential Encoder
0 = no	0 = round	0 = flying leads	J = 500 Line	C = 500 Line
1 = yes	1 = standard flat	1 = standard connector	K = 1000 Line	D = 1000 Line
	2 = key seat*		L = 2000 Line	E = 2000 Line

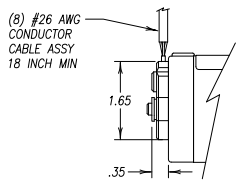
ElectroCraft has increased reliability by reducing internal motor parts count. The fully integrated encoder and commutation sensor design provide accurate and repeatable commutation signals.

Encoder Signals

Encoder Specifications for Single Ended Encoder

RP-Series

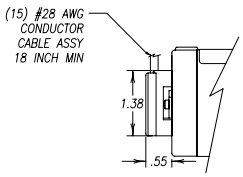
Pin 1	GND	Black	Pin 5	CH B	Blue
Pin 2	CH Z	Orange	Pin 6	HALL S1	Green
Pin 3	CH A	Yellow	Pin 7	HALL S2	Brown
Pin 4	+5 VDC	Red	Pin 8	HALL S3	White



Encoder Specifications for Differential Encoder

RP-Series

Pin 1	CH A +	Yellow	Pin 6	CH Z -	Orange/White	Pin 11	HALL 3	White
Pin 2	CH A -	Yellow/White	Pin 7	HALL 1	Green	Pin 12	Not Used	N/A
Pin 3	CH B +	Blue	Pin 8	Not Used	N/A	Pin 13	+ 5 VDC	Red
Pin 4	CH B -	Blue/White	Pin 9	HALL 2	Brown	Pin 14	GND	Black
Pin 5	CH Z +	Orange	Pin 10	Not Used	N/A	Pin 15	Not Used	N/A



RPP-Series

Power Cable (Flying Cable Version)		Encoder Cable (Flying Cable Version)				Feedback Connector Pinout			
Red	Phase A	CH A +	Yellow	HALL 3	White	Pin 1	CH A +	Pin 10	+ 5 VDC
White	Phase B	CH A -	Yellow/White	+ 5 VDC	Red	Pin 2	CH A -	Pin 11	GND
Black	Phase C	CH B +	Blue	GND	Black	Pin 3	CH B +	Pin 12	Reserved
Green	Ground	CH B -	Blue/White	Reserved	Gray	Pin 4	CH B -	Pin 13	Reserved
Power Connector Pinout		CH Z +	Orange	Reserved	Gray/White	Pin 5	CH Z +	Pin 14	Thermal SW
Pin A	Phase A	CH Z -	Orange/White	Thermal SW	Green/White	Pin 6	CH Z -	Pin 15	Thermal SW
Pin B	Phase B	HALL 1	Green	Thermal SW	Brown/White	Pin 7	HALL 1	Pin 16	Not Used
Pin C	Phase C	HALL 2	Brown			Pin 8	HALL 2	Pin 17	Not Used
Pin D	Ground					Pin 9	HALL 3		

* Option 2 available on shaft diameters 0.3150 inches (8mm) and larger

CompletePower Drive Accessories

Braking module

Braking module in a rugged aluminium case.

P/N ASO-BM-70-30

Patch Cable

P/N	50cm	100cm	200cm	300cm
Red	CA2005	CA2010	CA2020	CA2030
Yellow	CA4005	CA4010	CA4020	CA4030
Gray	CA8005	CA8010	CA8020	CA8030

Passive heatsink

Passive heatsink optimized for drives:

EA27 / EA47 P/N HA3008

fanned heatsink

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

EA27 / EA47 P/N HA3018

fanned heatsink

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

EA27 / EA47 P/N HA3028

Choke module

Choke module optimized for brushless drives.
Inductance: IA3100 = 3x50 µH;
IA3101 = 3x100 µH
Nominal current: 10 A P/N IA310x

DIN Rail mounting kit

DIN Rail mounting kit for units:

EA25 / EA27 / EA47 P/N MA0025

Dual Encoder Out Board

Dual Encoder Out Board / DIN Rail Mount
(Not required with ACE100-Series)
P/N 2000658

Resolver Convertor Board

Resolver Convertor Board / DIN Rail Mount
(Contact factory for details)

CompletePower Plus Drive Accessories

ACS External Shunt Kits

External Shunt Kit (110 W, 50 Ohm) for drives:

ACS100 / 200 P/N 1002991
ACS300 P/N 1002992

ACS Connector Interface Board

Connector Interface Board for drives
(not needed when using Quick Start I/O Kit):

ACS100 / 200 / 300 P/N 1001203

ACS Cable Kit

ACS Cable Kit including:

- J1 I/O Cable
- J2 Analog Cable
- J3 RS-232 Cable
- J4 Encoder Cable
- J5 Halls Input Cable
- P1 Power Input Cable*
- P2 Power Input Cable*

ACS100 / 200 P/N 1002115
ACS300 P/N 1002997

ACS Covers

Cover for drives
(cannot be used with Interface Board):
ACS100 / 200 P/N 330232
ACS300 P/N 330143

ACS Quick Start I/O Kit

Quick Start I/O Kit including:

- Quick Start I/O Board
- Quick-Start I/O to Drive Harness
- RS232 Interface Cable
- Motor Interface Board
- J4-Encoder cable
- J5-Hall cable
- P1-Power Input Cable*
- P2-Motor Input Cable*

ACS100 / 200 P/N 1002999
ACS300 P/N 1003001

ACE Quick Start I/O Kit

Quick Start I/O Kit including:

- Quick Start I/O Board
- RS232 Interface Cable
- Quick Start I/O to Drive Harness

ACE500 P/N 1002995
ACE1000 P/N 1002994

ACE External Shunt Kit

External Shunt Kit (300W, 50 Ohm) for drives:
ACE500, ACE1200/1300 P/N 1001502

RPP-Series Motor Cables

PRO Series and ACE Drive Products

Drive	Cable Type	Part Number (Length) - Custom lengths available, please contact the factory.		
PRO Series	Power	44-0895-00M5 (0.5m)	44-0895-001M (1.0m)	44-0895-003M (3.0m)
	Feedback	44-0896-00M5 (0.5m)	44-0896-001M (1.0m)	44-0896-003M (3.0m)
ACE500	Power	44-0891-001M (1.0m)	44-0891-003M (3.0m)	44-0891-009M (9.0m)
	Feedback	44-0892-001M (1.0m)	44-0892-003M (3.0m)	44-0892-009M (9.0m)
Universal	Power	44-0893-001M (1.0m)	44-0893-003M (3.0m)	44-0893-009M (9.0m)
	Feedback	44-0894-001M (1.0m)	44-0894-003M (3.0m)	44-0894-009M (9.0m)

* (ACS100/200 only)