

# ElectroCraft CompletePower™ Plus Universal Servo Drives

Product Datasheets for

**CPP-A06V48A-SA-USB**

**CPP-A12V80A-SA-USB**

**CPP-A24V80A-SA-USB**



ELECTRO-CRAFT  
**CompletePower™ Plus**  
UNIVERSAL DRIVE





## About ElectroCraft

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ElectroCraft, Inc. is a global provider of dependable, application-engineered fractional-horsepower motor and motion products. ElectroCraft custom manufacturing services cover the following products: AC motors, PMDC motors, brushless DC motors, stepper motors, servo motors, gearboxes, gearmotors, linear actuators, drives, servo drives, integrated motor drives.

Our products are found in thousands of different applications within industrial, commercial, and consumer product markets. While ElectroCraft provides a wide array of standard products with many configurable options, we have built our brand on custom OEM solutions that meet the precise performance, cost and quality our customers require.

For OEM customers who are unsatisfied with having to design around inflexible off-the-shelf products, our technical knowledge and customizable product families provide for a design experience which results in motor and motion systems that provide superior reliability and performance at the lowest possible cost. To learn more, visit [www.electrocraft.com](http://www.electrocraft.com)

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## Introducing ElectroCraft's Universal Drive, the newest addition to the ElectroCraft CompletePower™ Plus family of DC motor drives.

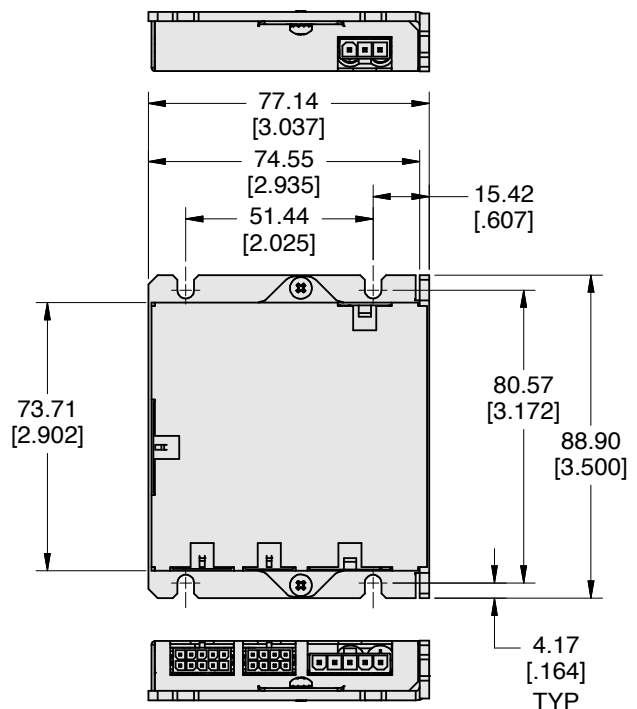
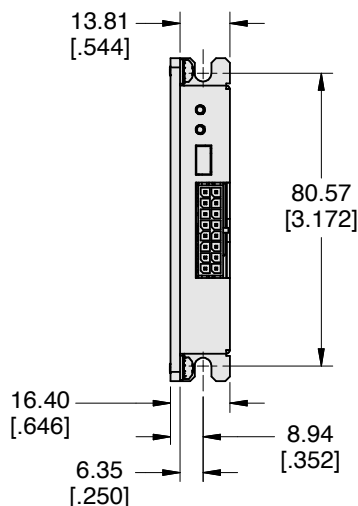
The Universal Drive takes performance, efficiency and flexibility to the next level, utilizing state-of-the-art digital drive technology combined with an intuitive and highly configurable user interface. Perfect for a wide range of industrial, commercial market, and consumer product applications. The CPP-A06V48A-SA-USB is one of three standard capacities in the model lineup. Customized versions are also offered to meet large volume OEM requirements.

- Driven by design to be one of the most space efficient, low voltage, digital servo drives available.
- Utilizing the latest in digital drive architecture to provide software selectable control mode operation.
- Compatible with Brushless, Brush and Stepper motors from 12 to 48 VDC and up to 6A continuous, 15A peak current.
- Current, Speed, Step and Direction modes of operation.
- Brushless motor has sine-wave commutation using either hall sensor or encoder feedback for smooth torque. Advanced Field Oriented Control provides high dynamic response resulting in a robust motor controller with low torque ripple that produces smoother, more efficient motion!
- Brush motor has Encoder feedback or IxR compensation.
- Step and Direction available for Brushless DC and Brush DC motors. Encoder required.
- Single step up to 256 microsteps open-loop control for Stepper motor (1MHz max step rate @ 50% ± 10% duty-cycle).
- Easy setup and configuration via USB interface with ElectroCraft Complete Architect™ - Windows-based software.



CPP-A06V48A-SA-USB Universal Servo Drive	
<b>Output Power, Peak:</b>	720 Watts
<b>Phase Current Peak:</b>	15 Amps (peak of sine)
<b>Phase Current Cont.:</b>	6 Amps (peak of sine)
<b>Output:</b>	+12 to +48 VDC
<b>Output Frequency:</b>	20, 40, 80 kHz (selectable)

Measurements are in mm [inches]



# CPP-A06V48A-SA-USB



ElectroCraft CompletePower™ Plus Universal Servo Drive

*More Power in a Smaller Package*

## TECHNICAL SPECIFICATIONS

### Pinouts

#### J1 – Supply

- 1 Gnd
- 2 Power
- 3 PE

#### J2 – Motor

- 1 A / A+
- 2 B / A-
- 3 C / B+
- 4 Brake / B-
- 5 Frame

#### J3 – Hall

- 1 Hall 1
- 2 Hall 2
- 3 Hall 3
- 4 Temp+
- 5 Frame
- 6 +5V<sub>out</sub>
- 7 Gnd
- 8 Temp-

#### J4 – Encoder

- 1 +5V<sub>out</sub>
- 2 +5V<sub>out</sub>
- 3 A+
- 4 B+
- 5 Z+
- 6 Frame
- 7 Gnd
- 8 A-
- 9 B-
- 10 Z-

#### J5 - I/O

- 1 Frame
- 2 A In+
- 3 Step
- 4 Limit+
- 5 Enable
- 6 Out0
- 7 Fault
- 8 +5V<sub>out</sub>
- 9 A Out
- 10 A In-
- 11 Dir
- 12 Limit-
- 13 Brake
- 14 In0
- 15 Ready
- 16 Gnd

#### J6 - USB

USB Communications

#### LED

- Green - Ready
- Red - Fault

### Features:

- +12 to +48 VDC power supply input.
- 6 Amps Cont., 15 Amps Peak (2 seconds).
- 2 and 4 quadrant modes.
- Sinusoidal and Trapezoidal commutation modes.
- 20 kHz, 40 kHz and 80 kHz of programmable PWM frequency options.
- Current, Speed, Step and Direction modes of operation.
- USB Communications.
- Drive status diagnostics.
- +/-10V Analog command input.
- +/-10V Analog output (configurable).
- Digital direction input.
- Configurable ramp for current and speed.
- Brushless motor has halls only operation mode and encoder mode for low speed performance.
- Brush motor has encoder feedback or IxR compensation.
- Step and Direction available for Brushless DC and Brush DC motors. Encoder required.
- Single step up to 256 microsteps open-loop control for Stepper motor (1MHz max step rate @50% ± 10% duty-cycle).
- Integrated circuit for brake regeneration.
- +/- Travel limit inputs.
- 97% efficiency at full load.
- Selectable software protection options.
- Windows®-based set-up and tuning utility software included.

### Model Specifications

DC Input .....	VDC .....	+12 to +48
Output .....	VDC .....	+12 to +48
Output Power, Peak.....	Watts .....	720
Phase Cur. Peak .....	Amps .....	15 (peak of sine)
Phase Cur. Cont. ....	Amps .....	6 (peak of sine)
Output Frequency .....	kHz .....	20, 40, 80 (selectable)
Motor Inductance .....	mH .....	0.1 to 50
Motor feedback & .....	VDC .....	+5, 3% reg.
Interface power .....	mA .....	250 max.
Ambient Temp. Range .....	°C .....	0 to 40
Humidity .....	5% to 95% RH, Non-Condensing	

### Control Loops

Speed loop update rate.....	Digitally adjustable up to 10 kHz
Current loop update rate .....	20 kHz
Position loop update rate .....	Digitally adjustable up to 10 kHz (Step and Direction only)
Loop operation .....	Velocity, Torque, Position (Step and Direction only)

### Feedback

Halls sensors .....	120°
Encoder .....	2 MHz, Differential or Single-ended
Current resolution .....	12 bit
Speed resolution .....	32 bit
Motors .....	Brushless DC, Brush DC, Stepper

### CPP Model Number

CPP	—	A	<b>0</b>	<b>6</b>	V	<b>4</b>	<b>8</b>	<b>A</b>	—	<b>S</b>	<b>A</b>	—	<b>U</b>	<b>S</b>	<b>B</b>
			Continuous	Voltage		Voltage	Revision	Form Factor					Interface		
			Current						SA = Stand Alone						



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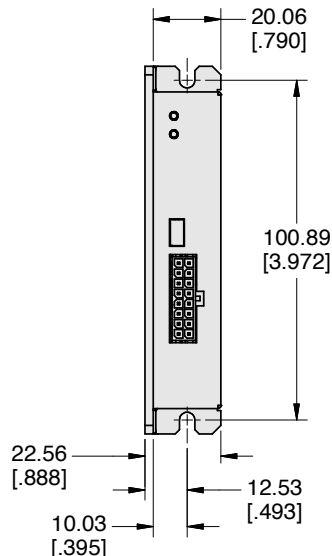
### Introducing ElectroCraft's Universal Drive, the newest addition to the ElectroCraft CompletePower™ Plus family of DC motor drives.

The Universal Drive takes performance, efficiency and flexibility to the next level, utilizing state-of-the-art digital drive technology combined with an intuitive and highly configurable user interface. Perfect for a wide range of industrial, commercial market, and consumer product applications. The CPP-A12V80A-SA-USB is one of three standard capacities in the model lineup. Customized versions are also offered to meet large volume OEM requirements.

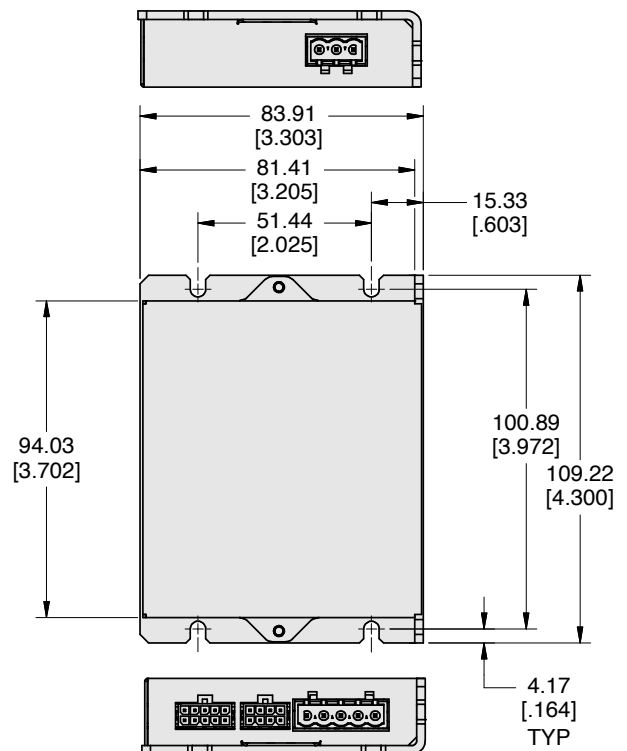
- Driven by design to be one of the most space efficient, low voltage, digital servo drives available.
- Utilizing the latest in digital drive architecture to provide software selectable control mode operation.
- Compatible with Brushless, Brush and Stepper motors from 12 to 80 VDC and up to 12A continuous, 30A peak current.
- Current, Speed, Step and Direction modes of operation.
- Brushless motor has sine-wave commutation using either hall sensor or encoder feedback for smooth torque. Advanced Field Oriented Control provides high dynamic response resulting in a robust motor controller with low torque ripple that produces smoother, more efficient motion!
- Brush motor has encoder feedback or IxR compensation.
- Step and Direction available for Brushless DC and Brush DC motors. Encoder required.
- Single step up to 256 microsteps open-loop control for Stepper motor (1MHz max step rate @50% ± 10% duty-cycle).
- Easy setup and configuration via USB interface with ElectroCraft Complete Architect™ - Windows-based software.



CPP-A12V80A-SA-USB Universal Servo Drive	
<b>Output Power, Peak:</b>	2400 Watts
<b>Phase Current Peak:</b>	30 Amps (peak of sine)
<b>Phase Current Cont.:</b>	12 Amps (peak of sine)
<b>Output:</b>	+12 to +80 VDC
<b>Output Frequency:</b>	20, 40, 80 kHz (selectable)



Measurements are in mm [inches]



# CPP-A12V80A-SA-USB



ElectroCraft CompletePower™ Plus Universal Servo Drive

*More Power in a Smaller Package*

## TECHNICAL SPECIFICATIONS

### Pinouts

#### J1 – Supply

- 1 Gnd
- 2 Power
- 3 Brake Res+
- 4 Brake Res-
- 5 PE

#### J2 – Motor

- 1 A
- 2 B
- 3 C
- 4 Frame

#### J3 – Hall

- 1 Hall 1
- 2 Hall 2
- 3 Hall 3
- 4 Temp+
- 5 Frame
- 6 +5V<sub>out</sub>
- 7 Gnd
- 8 Temp-

#### J4 – Encoder

- 1 +5V<sub>out</sub>
- 2 +5V<sub>out</sub>
- 3 A+
- 4 B+
- 5 Z+
- 6 Frame
- 7 Gnd
- 8 A-
- 9 B-
- 10 Z-

#### J5 - I/O

- 1 Frame
- 2 A In+
- 3 Step
- 4 Limit+
- 5 Enable
- 6 Out0
- 7 Fault
- 8 +5V<sub>out</sub>
- 9 A Out
- 10 A In-
- 11 Dir
- 12 Limit-
- 13 Brake
- 14 In0
- 15 Ready
- 16 Gnd

#### J6 - USB

USB Communications

#### LED

- Green - Ready
- Red - Fault

### Features:

- +12 to +80 VDC power supply input.
- 12 Amps Cont., 30 Amps Peak (2 seconds).
- 2 and 4 quadrant modes.
- Sinusoidal and Trapezoidal commutation modes.
- 20 kHz, 40 kHz and 80 kHz of programmable PWM frequency options.
- Current, Speed, Step and Direction modes of operation.
- USB Communications.
- Drive status diagnostics.
- +/-10V Analog command input.
- +/-10V Analog output (configurable).
- Digital direction input.
- Configurable ramp for current and speed.
- Brushless motor has halls only operation mode and encoder mode for low speed performance.
- Brush motor has encoder feedback and IxR compensation.
- Step and Direction available for Brushless DC and Brush DC motors. Encoder required.
- Single step up to 256 microsteps open-loop control for Stepper motor (1MHz max step rate @50% ± 10% duty-cycle).
- Integrated circuit for brake regeneration.
- +/- Travel limit inputs.
- 97% efficiency at full load.
- Selectable software protection options.
- Windows®-based set-up and tuning utility software included.

### Model Specifications

DC Input .....	VDC .....	+12 to +80
Output .....	VDC .....	+12 to +80
Output Power, Peak.....	Watts .....	2400
Phase Cur. Peak .....	Amps .....	30 (peak of sine)
Phase Cur. Cont. ....	Amps .....	12 (peak of sine)
Output Frequency .....	kHz .....	20, 40, 80 (selectable)
Motor Inductance .....	mH .....	0.1 to 50
Motor feedback & .....	VDC .....	+5, 3% reg.
Interface power .....	mA .....	250 max.
Ambient Temp. Range .....	°C .....	0 to 40
Humidity .....	5% to 95% RH, Non-Condensing	

### Control Loops

Speed loop update rate .....	Digitally adjustable up to 10 kHz
Current loop update rate .....	20 kHz
Position loop update rate .....	Digitally adjustable up to 10 kHz (Step and Direction only)
Loop operation .....	Velocity, Torque, Position (Step and Direction only)

### Feedback

Halls sensors .....	120°
Encoder .....	2 MHz, Differential or Single-ended
Current resolution .....	12 bit
Speed resolution .....	32 bit
Motors .....	Brushless DC, Brush DC, Stepper

### CPP Model Number

CPP – A 1 2 V 8 0 A – S A – U S B

Continuous Current
Voltage
Revision
Form Factor
SA = Stand Alone
Interface



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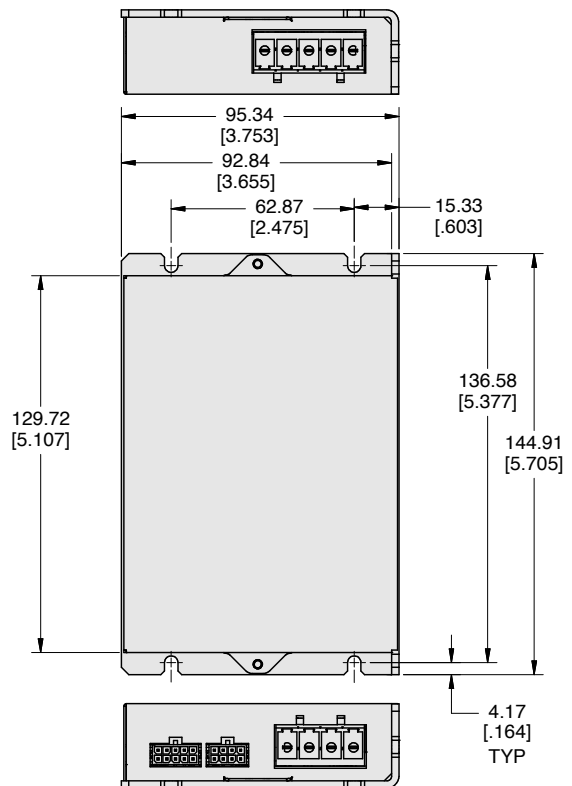
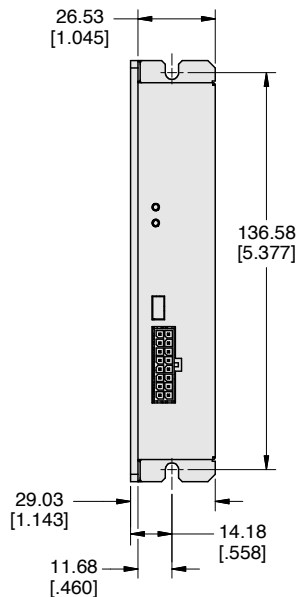
The Universal Drive takes performance, efficiency and flexibility to the next level, utilizing state-of-the-art digital drive technology combined with an intuitive and highly configurable user interface. Perfect for a wide range of industrial, commercial market, and consumer product applications. The CPP-A24V80A-SA-USB is one of three standard capacities in the model lineup. Customized versions are also offered to meet large volume OEM requirements.

- Driven by design to be one of the most space efficient, low voltage, digital servo drives available.
- Utilizing the latest in digital drive architecture to provide software selectable control mode operation.
- Compatible with Brushless and Brush motors from 12 to 80 VDC and up to 24A continuous, 60A peak current.
- Current, Speed, Step and Direction modes of operation.
- Brushless motor has sine-wave commutation using either hall sensor or encoder feedback for smooth torque. Advanced Field Oriented Control provides high dynamic response resulting in a robust motor controller with low torque ripple that produces smoother, more efficient motion!
- Brush motor has encoder feedback or IxR compensation.
- Step and Direction available for Brushless DC and Brush DC motors. Encoder required.
- Easy setup and configuration via USB interface with ElectroCraft Complete Architect™ - Windows-based software.



CPP-A24V80A-SA-USB Universal Servo Drive	
<b>Output Power, Peak:</b>	4800 Watts
<b>Phase Current Peak:</b>	60 Amps (peak of sine)
<b>Phase Current Cont.:</b>	24 Amps (peak of sine)
<b>Output:</b>	+12 to +80 VDC
<b>Output Frequency:</b>	20, 40, 80 kHz (selectable)

Measurements are in mm [inches]



# CPP-A24V80A-SA-USB

ElectroCraft CompletePower™ Plus Universal Servo Drive

*More Power in a Smaller Package*



## TECHNICAL SPECIFICATIONS

### Pinouts

#### J1 – Supply

- 1 Gnd
- 2 Power
- 3 Brake Res+
- 4 Brake Res-
- 5 PE

#### J2 – Motor

- 1 A
- 2 B
- 3 C
- 4 Frame

#### J3 – Hall

- 1 Hall 1
- 2 Hall 2
- 3 Hall 3
- 4 Temp+
- 5 Frame
- 6 +5V<sub>out</sub>
- 7 Gnd
- 8 Temp-

#### J4 – Encoder

- 1 +5V<sub>out</sub>
- 2 +5V<sub>out</sub>
- 3 A+
- 4 B+
- 5 Z+
- 6 Frame
- 7 Gnd
- 8 A-
- 9 B-
- 10 Z-

#### J5 - I/O

- 1 Frame
- 2 A In+
- 3 Step
- 4 Limit+
- 5 Enable
- 6 Out0
- 7 Fault
- 8 +5V<sub>out</sub>
- 9 A Out
- 10 A In-
- 11 Dir
- 12 Limit-
- 13 Brake
- 14 In0
- 15 Ready
- 16 Gnd

#### J6 - USB

USB Communications

#### LED

- Green - Ready
- Red - Fault

### Features:

- +12 to +80 VDC power supply input.
- 24 Amps Cont., 60 Amps Peak (2 seconds).
- 2 and 4 quadrant modes.
- Sinusoidal and Trapezoidal commutation modes.
- 20 kHz, 40 kHz and 80 kHz of programmable PWM frequency options.
- Current, Speed, Step and Direction modes of operation.
- USB Communications.
- Drive status diagnostics.
- +/-10V Analog command input.
- +/-10V Analog output (configurable).
- Digital direction input.
- Configurable ramp for current and speed.
- Brushless motor has halls only operation mode and encoder mode for low speed performance. Step and Direction mode requires encoder feedback.
- Brush motor has encoder feedback and IxR compensation. Step and Direction mode requires encoder feedback.
- Integrated circuit for brake regeneration.
- +/- Travel limit inputs.
- 98% efficiency at full load.
- Selectable software protection options.
- Windows®-based set-up and tuning utility software included.

### Model Specifications

DC Input .....	VDC .....	+12 to +80
Output .....	VDC .....	+12 to +80
Output Power, Peak.....	Watts .....	4800
Phase Cur. Peak .....	Amps .....	60 (peak of sine)
Phase Cur. Cont. ....	Amps .....	24 (peak of sine)
Output Frequency .....	kHz .....	20, 40, 80 (selectable)
Motor Inductance .....	mH .....	0.1 to 50
Motor feedback & .....	VDC .....	+5, 3% reg.
Interface power .....	mA .....	250 max.
Ambient Temp. Range .....	°C .....	0 to 40
Humidity .....	5% to 95% RH, Non-Condensing	

### Control Loops

Speed loop update rate .....	Digitally adjustable up to 10 kHz
Current loop update rate .....	20 kHz
Position loop update rate .....	Digitally adjustable up to 10 kHz (Step and Direction only)
Loop operation .....	Velocity, Torque, Position (Step and Direction only)

### Feedback

Halls sensors .....	120°
Encoder .....	2 MHz, Differential or Single-ended
Current resolution .....	12 bit
Speed resolution .....	32 bit
Motors .....	Brushless DC, Brush DC

### CPP Model Number

CPP	—	A	<b>2</b>	<b>4</b>	V	<b>8</b>	<b>0</b>	<b>A</b>	—	<b>S</b>	<b>A</b>	—	<b>U</b>	<b>S</b>	<b>B</b>
			Continuous	Voltage	Revision	Form Factor	Interface								
			Current			SA = Stand Alone									



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## Major Product Lines



Steppers



Brushless DC



PMDC



Drives



Cable / Harness Solutions



Linear Actuators



AC Motors



Integrated Motor Drives



Mobility Gearmotors



AC Synchronous



Tin Can Steppers



PMAC Synchronous



Stepper Gear Motors



Rotary Actuators

## Global Locations

