

Power Control Unit (PCU)

AL-4100 series PCUs provide precision motor drive for DC-servo based positioning subsystems that incorporate field-wound or permanent magnet (PM) servo motors of various ratings. They are capable of driving up to six axes sequentially, one axis at a time.

- 1/ AL-4107-2-6A (PCU)
 2/ AL-4107-2-1 (PSU)
 3/ AL-4189-1 (LCU)



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Applications

- Antenna Measurements
- **AL-4147-2:** Light & Medium Duty Positioning Subsystems
- **AL-4107-2-6A Models:** Heavy Duty Positioning Subsystems

Product Highlights

- Sequential Control Up to 6 Axes
- Compatible with ORBIT/FR and Qualified Third-Party Positioners
- Remote Control via AL-48061 Controller
- Precision DC Servo Control
- Pulse Width Modulation (PWM)
- Fail-Safe Protective Circuitry
- Superior Acceleration/Deceleration Profiles
- Supports Field-Wound or Permanent Magnet (PM) DC Motors

Series Overview

Model	AL-4147-2	AL-4107-2-6A	AL-4107-2-6A-4A5
Main Components	AL-4147-2 Power Control Unit (PCU)	<ul style="list-style-type: none"> • AL-4107-2-6A Power Control Unit (PCU) • AL-4107-2-1 Power Supply Unit (PSU) • AL-4189-2L Local Control Unit (LCU) w/ Interconnect Cable (10 m standard) 	<ul style="list-style-type: none"> • AL-4107-2-6A Power Control Unit (PCU) • AL-4107-2-1 Power Supply Unit (PSU) • AL-4189-2L Local Control Unit (LCU) w/ Interconnect Cable (10 m standard)
Motor Horsepower	Up to 1.5 HP	<ul style="list-style-type: none"> • Up to 5 HP (axes ABC) • Up to 1 HP (axes DEF) 	<ul style="list-style-type: none"> • Up to 5 HP (axes ABCD) • Up to 1 HP (axes EF)

Specifications - AL-4100 Series Power Control Units (PCU)

PARAMETER	POSITIONER MODEL		
	AL-4147-2	AL-4107-2-6A	AL-4107-2-6A-4A5

OPERATIONAL

Front Panel Controls & Indicators	<ul style="list-style-type: none"> AC Power On/Off Emergency Stop (Latching Panic Button) 	Power Control Unit (PCU): <ul style="list-style-type: none"> AC Power On/Off Emergency Stop (Latching Panic Button)
		Power Supply Unit (PSU): <ul style="list-style-type: none"> AC Power On/Off

ELECTRICAL

AC Input Power	<ul style="list-style-type: none"> 115/230 VAC +/- 10%, 50/60 Hz, single phase 7A rms @ 115 VAC 3.5A rms @ 230 VAC 	<ul style="list-style-type: none"> Standard: 208 VAC +/- 10%, 60 Hz, 3 ϕ 30A rms @ 208 VAC Opt. 001: 380 VAC +/- 10%, 50 Hz, 3 ϕ 20A rms @ 380 VAC
Controlled Axes	6 sequential control	
Minimum Motor Size	1/16 HP	<ul style="list-style-type: none"> 2 HP (axes ABC) 1/16 HP (axes DEF)
Maximum Motor Size	1.5 HP	<ul style="list-style-type: none"> 5 HP (axes ABC) 1 HP (axes DEF)
Motor Armature Supply	0 to \pm 115 VDC, up to 15 Amps	0 to \pm 115 VDC, up to 35 Amps
Motor Armature Current Limiting	<ul style="list-style-type: none"> 2.5 to 10 Amps Each Axis Selectable Via Internal Dip Switch 	<ul style="list-style-type: none"> Axes ABC: 2 - 5 HP Axes DEF: 1/16 - 1 HP Each Axis Selectable Via Internal Dip Switch
Motor Field Supply	110 VDC, 2 Amps Max Continuous	115 VDC, 3 Amps Max Continuous
Motor Driver Method	<ul style="list-style-type: none"> Filtered Pulse Width Modulated (PWM) 32 kHz Nominal Switching Rate (above audible range) 	<ul style="list-style-type: none"> Filtered Pulse Width Modulated (PWM) 32 kHz Nominal Switching Rate (above audible range)
Motor Direction	Bi-Directional	
Dynamic Braking Supply	24 VDC, 2 Amps Max	
Compatible Local Control Units (LCU)	<ul style="list-style-type: none"> AL-4189-2L Series AL-4188 Series 	

PHYSICAL

Dimensions	<ul style="list-style-type: none"> 19.0 in (48.3 cm) Width 7.0 in (17.8 cm) Height 20.0 in (50.0 cm) Depth 	Power Control Unit (PCU): <ul style="list-style-type: none"> 19.0 in (48.3 cm) Width 7.0 in (17.8 cm) Height 12.1 in (30.7 cm) Depth
		Power Supply Unit (PSU): <ul style="list-style-type: none"> 19.0 in (48.3 cm) Width 10.5 in (26.7 cm) Height 12.1 in (30.7 cm) Depth
Weight	60 lbs (28 kg)	192 lbs (87 kg)

ENVIRONMENTAL

Operating Temperature	32° to 122° F (0° to 50° C)	32° to 140° F (0° to 60° C)
Storage Temperature	- 4° to 167° F (- 20° to 75° C)	
Relative Humidity	70%	

1/ AL-4147-2

For better EMI performance and easier integration, the AL-4147-2 provides high ground isolation between its input signal circuitry, control circuit and power stage. It also incorporates a highly modular design allowing for easy maintainability. This model is suited to applications requiring remote separation of the PCU.

2/ AL-4107-2-6A Models

These models represent ORBIT/FR's third-generation of heavy duty PCUs incorporating state-of-the-art control engineering technology, including four-quadrant Pulse Width Modulation (PWM) techniques and sophisticated, fail-safe protective circuitry. They offer precision DC servo control and superior acceleration and deceleration profiles.

3/ AL-4189 Local Control Unit

This LCU is a hand-held control box specifically designed and built to be used in conjunction with ORBIT/FR Controllers and PCU's. It provides the user with a higher degree of flexibility in operating the system elements. This LCU allows remote control of the various system axes, up to 12 axes. The unit is connected directly to the controller or matrix box via cable. The movement speed can be fine or coarse.

Front Panel

Controls

- AC Power On/Off
- Emergency Stop (E-Stop)

Technical Notes

- AL-4147-2 is functionally compatible with previous generation model

Supplied Accessories

Digital Documentation Set

- User Manual (Installation, Setup, Operation)

AL-4147-2

- AC Power Cord, IEC-320 (F) to Plug

AL-4107 Models

- Unterminated AC Power Cord (3 Phase)
- AL-4189-2L Local Control Unit (LCU) w/ Interconnect cable (10 m standard)

Options

All Models

- Opt. 101 - Additional Manual Set
- Opt. 102 - International Localization (Specify Country & Voltage)

AL-4107 Models

- Opt. 001 - Outdoor Enclosure for AL-4107-2-6A PCU & AL-4107-2-1 PSU. 19 Inch EIA. Includes front door, rear cable input, AC outlet strip, heater, and cooling fans. Rated for indirect outdoor exposure. Suitable for outdoor silos and base risers
- Opt. 002 - Interface Unit, S/A 4180 Format

- Standard Optional

AL-4189-2L in use



Contact your local sales representative for more information

salesteam@mvg-world.com

www.mvg-world.com/positioners