

# Positioner Controller, Simultaneous

AL-4164

The AL-4164 programmable positioner controller offers real-time control of positioning subsystems used in near-field and far-field antenna measurement systems. This controller may be configured to drive planar scanners and general purpose far-field positioners that are encoder-based or involve simultaneous motion.



## Applications

- Near-Field & Far-Field Antenna Measurements
- Encoder-Based Positioners & Scanners
- Light, Medium & Heavy Duty Positioning Subsystems

## Product Highlights

- Simultaneous Control Up to 4 Axes
- 4 Independent PWM Channels
- Factory-Configurable Armature Output Voltage (24, 48 or 90 VDC)
- Built-In Power Control Unit (PCU)
- Absolute & Incremental Encoder Support
- Brush & Brushless Motor Support
- 8 TTL I/O Lines for Auxiliary Component Control
- User-Friendly Axis Configuration Software
- Dynamic Density Control (DDC)
- Communication to Host PC Supported by LAN, RS-232 & CAN Bus

## Series Overview

Model	AL-4162	AL-4164
Horsepower	Up to 1/3	Up to 1.25
Number of Axes	2	4

## Front Panel

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### Controls

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- AC Power On/Off
  - Axis Select
  - Direction/Speed
    - Coarse & Fine
  - Remote/Local Control (BUS/PANEL)
  - Emergency Stop (E-Stop)
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### Displays & Indicators

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- Axis Position
  - Limit Indicators
  - Homing Status
  - Homing Completed
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## Position Sensors

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### Axis-Independent Position Sensor Selection

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- Incremental Encoder & Absolute Encoder (EnDat®)
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## Velocity Sensors

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### Axis-Independent Velocity Sensor Selection

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- Incremental Encoder & Tachometer
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## Closed Loop Motion Control Algorithms

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- User Selectable PID or PIV Motion Control Filters
  - Dynamic Braking
  - Comprehensive Motion Profiles – Velocity, Parabolic Ramping, S-Curve & Acceleration/Deceleration
  - Single or Dual Feedback Encoders
  - 3 Sets of Control Filter Scheduling
    - In-Motion
    - In-Settling
    - In-Position
  - BEMF Feedback Circuits
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## Data Recording

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- Data Recording Buffer Up to 100,000 Points
  - Simultaneous Recording Up to 10 Vectors
  - Record Up to 100,000 Vectors
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## Trigger Functions

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- Supports Discrete Position Trigger Tables
  - User Selectable Pulse Polarity
  - User Selectable Pulse Width
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## Position Correction

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- On-the-Fly Calculation Using Linear Interpolation
  - Up to 40,000 Points (Can Be Divided – 10,000 Points Per Axis)
  - Mapping in User Selectable Units
  - Inverse/Transpose Table
  - Set Table Data – Constant/Linear
  - Load Table from File
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## Onboard Programming

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- Run Up to 10 Programs in Parallel
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## Supplied Accessories

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### Digital Documentation Set

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- User Manual (Installation, Setup, Operation)
  - Programming Reference Manual
  - Software Setup Utility
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### Cables

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- Cable, CAN, DB9 to RJ45
  - Cable, RS-232, DB9 to RJ45
  - AC Power Cord, IEC-320 (F) to Plug
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## Options

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- Opt. 001 - PC-Based CAN-PCI Communication Card
  - Opt. 002 - USB to CAN Adaptor
  - Opt. 101 - Additional Manual Set
  - Opt. 102 - International Localization (Specify Country & Voltage)
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- Standard  Optional

## Specifications - AL-4160 Series Simultaneous Controllers

PARAMETER	POSITIONER MODEL	
	AL-4162	AL-4164

### OPERATIONAL

Front Panel Controls & Indicators	<ul style="list-style-type: none"> <li>• AC Power On/Off</li> <li>• Axis Select</li> <li>• Coarse/Fine Speed</li> <li>• Speed/Direction Control</li> <li>• Local/Remote (Panel/Bus)</li> <li>• Emergency Stop (Latching Panic Button)</li> <li>• Digital Display w/ Limit Indicators</li> </ul>
Correction Table Support (Geometrical Error)	Optional (Opt. 009)

### ELECTRICAL

AC Input Power	<ul style="list-style-type: none"> <li>• 115/230 VAC +/- 10%, 47-63 Hz, single phase</li> <li>• 10A rms @ 115 VAC</li> <li>• 5A rms @ 230 VAC</li> </ul>	
Power Dissipation	0.7 KVA max	1.3 KVA max
Controlled Axes	2 simultaneous control	4 simultaneous control
EMI Filtering	MIL-STD-461/2, VDE 0871/3.68	
VDE Tests	<ul style="list-style-type: none"> <li>• Leakage: 1,500 VAC</li> <li>• Insulation: 500 VDC</li> <li>• Bonding: 25 ADC</li> </ul>	
Speed Control Range (User-selectable)	<ul style="list-style-type: none"> <li>• Coarse: 0-100%</li> <li>• Fine: 0-18%</li> </ul>	
Supported Position Sensors	Incremental Encoder	<ul style="list-style-type: none"> <li>• Selectable for each axis via setup utility</li> <li>• Incremental Encoder</li> <li>• EnDat<sup>®</sup> Absolute Encoder</li> </ul>
Communication Links	<ul style="list-style-type: none"> <li>• RS-232 (115,200 Baud Rate)</li> <li>• CAN Bus</li> </ul>	<ul style="list-style-type: none"> <li>• RS-232 (115,200 Baud Rate)</li> <li>• CAN Bus</li> <li>• LAN</li> </ul>
Trigger Functions	Trigger In/Out	
Data Take-Off Accuracy	Up to 29 bit resolution	
Supported Motion Control Filters	User Selectable PID/PIV	
Control Filter Scheduling	In-Motion & In-Settling	In-Motion, In-Settling, In-Position
Linked Axes	Axes 1 & 2 Only	
Load Inductance	No output choke required	
Maximum Motor Size	1/3 HP	3/4 HP
Motor Armature Supply (By Current)	<ul style="list-style-type: none"> <li>• Axis 1: 4 Amps (avg.)</li> <li>• Axis 2: 4 Amps (avg.)</li> </ul>	<ul style="list-style-type: none"> <li>• Axis 1: 10 Amps (avg.)</li> <li>• Axis 2: 10 Amps (avg.)</li> <li>• Axis 3: 6 Amps (avg.)</li> <li>• Axis 4: 6 Amps (avg.)</li> </ul>

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### ELECTRICAL

<b>Motor Armature Supply (By Voltage)</b>	0 to ± 90 VDC	<b>Factory-Configurable Armature Output Voltage</b> <ul style="list-style-type: none"> <li>• 0 to ± 90 VDC</li> <li>• 0 to ± 48 VDC</li> <li>• 0 to ± 24 VDC</li> </ul>
<b>Motor Armature Current Limiting</b>	<ul style="list-style-type: none"> <li>• 1 to 5 amps</li> <li>• Each Axis Selectable Via Internal Dip Switch</li> </ul>	<ul style="list-style-type: none"> <li>• 1 to 15 amps</li> <li>• Each Axis Selectable Via Internal Dip Switch or Setup Utility</li> </ul>
<b>Motor Field Supply</b>	110 VDC, 2 Amps Max Continuous	
<b>Motor Driver Method</b>	<ul style="list-style-type: none"> <li>• Filtered Pulse Width Modulated (PWM)</li> <li>• 32 kHz Nominal Switching Rate (above audible range)</li> </ul>	
<b>Motor Direction</b>	Bi-directional	
<b>Dynamic Braking Supply</b>	24 VDC, 2 Amps Max	
<b>Compatible Local Control Units (LCU)</b>	–	<ul style="list-style-type: none"> <li>• AL-4146-2L Series</li> <li>• AL-4188 Series</li> </ul>

### PHYSICAL

<b>Dimensions</b>	<ul style="list-style-type: none"> <li>• 19.0 in (48.3 cm) Width</li> <li>• 3.5 in (8.9 cm) Height</li> <li>• 15.0 in (38.0cm) Depth</li> </ul>	<ul style="list-style-type: none"> <li>• 19.0 in (48.3 cm) Width</li> <li>• 7.0 in (17.8 cm) Height</li> <li>• 19.5 in (49.4 cm) Depth</li> </ul>
<b>Weight</b>	33 lbs (15 kg)	70.4 lbs (31.9 kg)

### ENVIRONMENTAL

<b>Operating Temperature</b>	32° to 122° F (0° to 50° C)
<b>Storage Temperature</b>	- 4° to 167° F (- 20° to 75° C)
<b>Relative Humidity</b>	90%



**Contact your local sales representative for more information**  
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[www.mvg-world.com/positioners](http://www.mvg-world.com/positioners)