ZETA6000 Series

Packaged Drive/Controller Systems

Compumotor's ZETA6000 Series products are stand-alone, single-axis drive/controller systems. The ZETA6000 Series products come in 4 different power versions: ZETA6104, ZETA6104-240, ZETA6108 and ZETA6112. These ZETA6000 products pack all the power and reliability of the 6000 family of controllers and ZETA drives into one convenient package. All of the I/O points, RS-232C/RS485 control, operator interface options, and following capabilities for single-axis applications are included. The following package can perform phase shifts, electronic gearbox, and flying cutoff functionality with ease.

The ZETA6000 Series package was made for easy and reliable installation. The connections are on removable screw terminals and a standard 50-pin header allowing simple installation and cable routing without having to cut off and reattach a connector.

The ZETA6000 Series is designed to solve single-axis applications cleanly, completely, and for a low cost. For multiple-axis applications, up to 99 ZETA6000 Series can be daisy chained (32 ZETA6000 Series can be multi-dropped using RS-485) to work together.

In order to speed your application development, the ZETA6000 Series comes standard with Motion Architect™, a Microsoft® Windows™-based development package. Motion Architect™ contains many tools which allow you to easily create and implement motion programs. The ZETA6000 Series is also compatible with Motion Toolbox™, DDE6000 Server, and Motion Builder™ software packages.

The ZETA6000 Series uses the 6000 Series command language. This popular language is powerful enough to implement complex motion control applications and simple enough to not overwhelm the novice programmer. The ZETA6000 Series is your single-axis solution.

Features

Performance

- One axis package drive/controller
- Active Damping™ benefits:
  - Damping ratios of up to 0.5
  - Higher acceleration than conventional step systems
  - Decrease motor vibration
  - Increase shaft power
  - Higher performance
- Electronic Viscosity™ benefits:
  - Reduce settling time
  - Increase slower speed smoothness (reduce velocity ripple)
  - Reduce audible noise

Protection Circuit

- Motor short circuits (phase-to-phase and phase-to-ground)
- Overtemperature of internal drives and power supply
- Overvoltage (protects against overvoltage from regeneration)
- Power dump (dissipates excess voltage caused by load regeneration)

I/O

- Encoder channel configurable as hardware up/down counter
- Incremental encoder input
- Home and end-of-travel limit inputs

Features (continued)

- Two fast (trigger) inputs for position capture, registration, etc.
- 16 programmable inputs (Opto-22 compatible)
- 8 programmable outputs (Opto-22 compatible)
- One auxiliary programmable output

Language

- 150,000 bytes of non-volatile memory for storing programs and paths
- Interrupts program execution on error conditions
- Encoder and motor position capture (using the trigger inputs)
- Registration (using the trigger inputs)
- Selectable damping (programmable) to optimize performance for changing loads
- Variable storage, conditional branching and math capability
- Program debug tools – single-step and trace modes, breakpoints, error messages and simulation of I/O

Software Provided

- Motion Architect™, Microsoft® Windows™-based application development software
- Dynamic Link Library (DLL) provided for use with Microsoft® Windows™ and Microsoft® Windows™ NT software development kits

Optional Software

- Motion Toolbox™ library of LabVIEW® virtual instruments (VIs) for icon-based programming of Compumotor's 6000 Series controllers
- Dynamic Data Exchange (DDE) server available allowing data exchange between different Windows™ software applications
- Motion Builder™ provides a visual-development environment for graphical icon-based programming of the 6000 Series product

Interface Capabilities

- Direct interface to RP240 Remote Operator Panel
- Operates stand-alone or interfaces to PCs, PLCs, and thumbwheels
- One RS-232C communication port
- One RS232C/485 configurable port

Physical

- Stand-alone drive/controller package
- Status/fault LEDs to confirm proper operation (four diagnostic LEDs)
- Removable connectors for easy installation
- 120VAC (170VDC bus voltage) for ZETA6104, ZETA6104-240, ZETA6108, ZETA6112
- 240VAC (340VDC bus voltage) for ZETA6104-240

Specifications – ZETA6104, ZETA6108, ZETA6112, and ZETA6104-240

	Parameter	Value			
Power		**ZETA6104**	**ZETA6108**	**ZETA6112**	**ZETA6104-240**
	AC Power Input	---------- 95-132VAC Single Phase, 50/60Hz ----------			95-264VAC Single Phase, 50/60Hz
Motor Curent (Apk)		0-4Amps	0-8 Amps	0-12 Amps	0-4 Amps
	Bus Voltage	---------- 170 VDC nominal ----------			@120VAC: 170VDC nominal, @240VAC: 340VDC nominal
Performance	Position range	±2,147,483,648 steps			
	Velocity range	1 to 2,000,000 steps/sec			
	Acceleration range	1 to 24,999,975 steps/sec^2			
	Motion Algorithm Update Rate	2 ms			
RS-232C Interface	Connections	3-wire (Rx, Tx, and GND) connection to the COM1 and/or COM2 connectors.			
	Max number of daisy chained	Up to 99 units			
	Address settings	Selectable			
	Communication parameters	9,600 baud (auto-baud option); 8 data bits, 1 stop bit, no parity bit, full duplex.			
RS-485 Interface	Connections	2-wire or 4-wire (Rx+, Rx-, Tx+, Tx-) connection to the COM2 connector (COM2 needs to be configured to RS-485 Interface).			
	Max number of multi-dropped	Up to 99 units			
	Address settings	Selectable (see optional DIP switch setting and ADDR command).			
	Communication parameters	9,600 baud, 8 data bits, 1 stop bit, no parity bit, half duplex.			
Protection	Short Circuit	Phase-to-phase, phase-to-ground			
	Brownout	AC supply drops below 85VAC			
	Over-temperature	Over-temperature shutdown fault at 113°F (55°C)			

Additional Specifications Continued on Following Page

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Specifications – ZETA6104, ZETA6108, ZETA6112, and ZETA6104-240 (Continued)

Inputs (see also I/O pinouts & circuit)	HOM, POS, NEG, TRG-A TRG-B, P-CUT	Powered by voltage applied to V_I/O terminal (switching levels: ≤ 1/3 of V_I/O voltage = low, ≥ 2/3 of V_I/O voltage = high). V_I/O can handle 5–24V with max current of 100 mA. Internal 6.8 KΩ pull-ups to AUX-P terminal—connect AUX-P to power source (+5V terminal or an external 5–24V supply) to source current or connect AUX-P to power source (+5V terminal or an external 5–24V supply) to source current or connect AUX-P to GND to sink current; AUX-P can handle 0–24V with max current of 50 mA. Voltage range for these inputs is 0–24V.
	Encoder	Differential comparator accepts two-phase quadrature incremental encoders with differential (recommended) or single-ended outputs. Max voltage = 5VDC. Switching levels (TTL-compatible); Low ≤0.4V, High ≥ 2.4V. Maximum frequency = 1.6 MHz. Minimum time between transitions = 625 ns.
	16 General Purpose Programmable	HCMOS compatible* with internal 6.8 KΩ pull-up to IN-P terminal—connect IN-P to power (+5V pin #49 or an external 5-24V supply) to source current or connect IN-P to GND to sink current; IN-P can handle 0-24V with max current of 100 mA. Voltage range = 0–24V.
Outputs	All outputs are optically isolated from the microprocessor (not from the other outputs).	
	9 Programmable (includes OUT-A)	Open collector output with 4.7 kΩ pull-ups. Can be pulled up by connecting OUT-P to power source (+5V terminal or an external 5-24V supply); OUT-P can handle 0-24V with max current of 50 mA. Outputs will sink up to 300 mA or source up to 5 mA at 5-24VDC. 8 general purpose outputs on the Programmable I/O connector, OUT-A on the I/O connector.
	+5V Output	Internally supplied +5VDC. +5V terminals are available on the COM2, ENCODER and I/O connectors. Load limit (total load for all I/O connections) is 0.5A.
Environmental	Operating drive	32°F to 113°F (0°C to 45°C) Fan cooling may be required if airflow restricted.
	Storage drive	-40°F to 185°F (-30°C to 85°C)
	Motor	212°F (100°C) maximum motor case temperature. Actual temperature rise is duty-cycle dependent.
	Humidity	0-95%, non-condensing
Diagnostic LEDs		Power/drive on, step pulses, drive over-temperature, and motor short circuit
Certification	UL Recognized	ZETA6104, ZETA6104-240, ZETA6108, ZETA6112
	CE (LVD)	ZETA6104, ZETA6104-240, ZETA6108, ZETA6112

* *HCMOS-compatible switching voltage levels: low ≤ 1.0V, high ≥ 3.25V; TTL-compatible switching voltage levels: low ≤ 0.4V; high ≥ 2.4V*