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Find the *Control Technology 2214-1* at our website: ***Click HERE***

Model 2214-1, -2 Single/Dual Axis Servo Module

Powerful, Software-tunable Servo Controller

Control Technology Corporation



Bringing high-performance servo control to compact controllers, the model 2214 Servo Control Module uses advanced technology to provide you with an extremely flexible, easily tuned servo system at a low per-axis cost. A fast 16-bit processor performs all aspects of servo control, leaving the controller's main processor free to attend to other operations.

Tuning the model 2214 is accomplished from the controller's program using the *profile servo* command. This command allows modification of all servo parameters, including maximum velocity, acceleration rate, holding mode and PID parameters, either at rest or "on-the-fly". These parameters may be derived either from fixed values, or may be calculated or derived from various external input sources, thus providing an unprecedented measure of flexibility in controlling servo performance.

Engineered for High Performance

The superior performance of the model 2214 , including a velocity resolution of 4 steps per second and an acceleration resolution of 16 steps/sec/sec, is due to the adoption of advanced design techniques, including a highly-integrated 16-bit microcontroller. A wide range of velocities and acceleration rates may be accommodated, and acceleration and deceleration may be independently programmed.

Instruction execution has also been dramatically improved through the use of dual-port RAM technology, providing a rapid means of communication between the model 2214 and the controller's main CPU. This allows your program to run faster, even with up to 16 axes of servo control in a single system!

Designed for Fast, Convenient Interfacing

As with all Control Tech. control products, the model 2214 has been designed for the realities of industrial application — not only are all of the encoder and auxiliary inputs optoisolated from the board's logic, but the servo command signal(s) are independently isolated with a separate on-board switching power supply. This greatly reduces the risk of external "ground loops" when connecting to foreign servo drives.

The module's encoder inputs may be selected for either single-ended or differential connection, allowing you to take advantage of the superior noise immunity offered by differential-output encoders. A built-in power converter provides a regulated 5 volt supply, with up to 0.5 amp capacity, for powering external encoders.

In all, the model 2214 represents a new performance level for integrated servo control, at a cost which makes servo technology practical for a new range of applications.

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The model 2214 Servo Control Module may be used in any Control Tech. controller with a type 2200 bus. Dual axis (-2) and single axis (-1) versions are available.

Commands are supported for three modes of operation: Absolute positioning, relative positioning and velocity (continuous) mode operation. Automatic home-seeking modes are also supported.

Instantaneous position and error data may be obtained from the board at any time, allowing implementation of self-teaching and fault monitoring programs.

Each axis provides five auxiliary inputs, each with an LED indicator, performing the following functions:

STOP – commands the processor to stop servo motion (note: in critical or dangerous applications, external means should be used to implement an E-STOP function!).

FWD-LIM – similar to STOP, but only inhibits motion in the forward direction.

REV-LIM – similar to STOP, but only inhibits motion in the reverse direction.

HOME – used to establish a "home" (zero) reference point for absolute positioning.

START – any motion may, optionally, be programmed to wait for this input.

For More Information

Further detailed connection and application information may be found in Control Tech. publication IG2214; this is the Installation Guide for the model 2214.

Selection and applications assistance may be obtained from our staff of Systems Specialists — call the number below for further information.

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Hopkinton, MA 01748

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Toll Free (800) 282-5008
Facsimile (508) 435-2373
email help@control.com

See us on the World Wide Web:
http://www.control.com/

Absolute Maximum Ratings

	Min	Max	
Command Load Resistance	2.0		kΩ
Encoder Input Voltage	0.0	+5.0	VDC.
Encoder (+5 V.) Supply Output Current (total - both axes)		500.0	mA
Ambient Temperature (operating)	0	50	°C

Specifications

	Min	Typ	Max	
Command Outputs				
Nominal Voltage Range	-10.0		+10.0	VDC
Encoder Inputs				
Nominal Input Range	0.0		+5.0	VDC
Open-circuit Voltage (Ii = 0 mA)		5.0	5.38	VDC.
Logic-low Current (Vi = 0 V.)		1.1	1.2	mA
Threshold (single-ended mode)				
low-to-high		1.1		VDC
high-to-low		0.9		VDC
Auxiliary Inputs				
Off Voltage (Ii = 0 mA) - Note 2		24.0	26.4	VDC.
On Current (Vi = 0 V.)		2.1	2.5	mA
Threshold				
low-to-high		8.5		VDC.
high-to-low		7.5		VDC.

Performance Specifications – (Note 4)

Maximum Velocity Setting	3.9		250,000	Steps/sec
Resolution of Max. Velocity Setting		3.9		Steps/sec
Accel. and Decel. Settings	0		130,000,000	Steps/s/s
Resolution of Accel/Decel Setting		15.3		Steps/s/s
Position Range (Absolute Mode)	-2,147,483,648		2,147,483,647	Steps
Relative Motion Command Range	-2,147,483,648		2,147,483,647	Steps

Power Requirements (from controller)

Logic Supply (5 V.)	190.0	230.0	mA
Auxiliary Supply (24 V.)	41.0	190.0	mA

Notes:

1. Specifications shown above are at 25° C., unless otherwise noted.
2. Dependent on controller auxiliary supply voltage (24 V. typ).
3. PID parameters are programmed as relative values in the range of 0 to 255.
4. In Performance Specifications, the term "step" refers to one edge transition on either encoder input for that axis.

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