Model 2220 Analog Input/Output Module

High Resolution Inputs, Bipolar Outputs and Digital Outputs

Control Technology Corporation
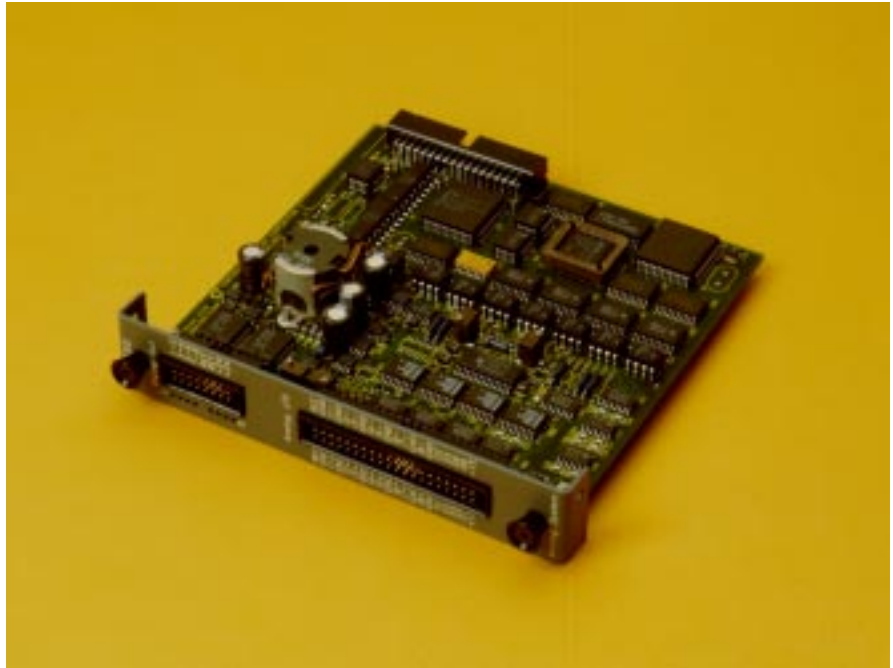
The 2220 analog subsystem provides 8 differential analog inputs, 8 analog outputs and 8 digital outputs in a single module. The bipolar (±10 Volt) analog inputs offer 15 bit resolution, and may be individually programmed to digitally filter the incoming signal, providing increased stability. From 2 to 256 analog samples may be continuously averaged at an update rate of 2.083 milliseconds.

The eight bipolar analog outputs have a resolution of 13 bits, and an output range of ±10 Volt. Eight open-collector outputs are also available for driving DC loads. Each output will handle up a .5 amp load and provides over-current and short circuit protection.

Local CPU for Increased Performance

The model 2220 is equipped with a 16-bit processor to perform all on-board related functions. This results in fast asynchronous update times without any performance degradation of the controller's main CPU. Each I/O point is refreshed every 2.083 milliseconds and made available to the main CPU via dual-port RAM technology. Your Quickstep application program is free to interrogate analog inputs and write to the outputs at any time without injecting lengthy conversion delays into the execution time.

Isolation

All model 2220 inputs and outputs are optically isolated from the controller's CPU logic to reduce error-inducing ground-loops and increase noise immunity. As with other analog modules offered by CTC, the analog ground of each 2220 is transformer isolated locally, further reducing the potential for ground interaction in a complex system.

Input Threshold Triggering

Each analog input may be locally configured to control an associated digital output, based on reaching a predefined set-point. These set-points may be dynamically adjusted from the controller's program or via an operator interface. Two set-points per channel are used to configure a hysterisis boundary that prevents undesired crossover switching of the digital output. Since the threshold sensing is handled locally on the 2220, it is not subject to controller response times and is repeatable to within 2.25 milliseconds per channel.

The model 2220 Analog I/O module may be used with the 2600XM and 2700 series controllers.

Absolute Maximum Ratings	Min	Max	
Ambient temperature			
operating	0	50	°C
storage	-20	80	°C
Maximum analog input voltage		±15	VDC
Minimum analog output load resistance	2.0		kΩ
Maximum output current			
Precision 10 volt reference output		25	mA
Digital outputs (per output)		500	mA
Analog isolation - voltage withstand			
(one minute duration max.)		1500	volts

Analog Input Specifications	Min	Typ	Max	
Differential input range	-10.000000		+10.000000	VDC
Common mode voltage range	-10		+10	VDC
Input resistance		10		MΩ
Input resolution (15 bit)		.00305		%FS
Input accuracy		.00305		%FS
(25 °C, 8-sample filtering)				
Input conversion time		2.083		ms
(asynchronous)				
Input filter settings	2.083		533.248	ms
(default = 1 sample)				
Threshold triggering response		2.25		ms
(Analog input to digital output response)				

Analog Output Specifications	Min	Typ	Max	
Output voltage range	-10.000		10.000	VDC
Output resolution	2.44			mV
Output settling time				
-10.000 to +10.000 V		.2		ms
0 to 5.000 V		.1		ms

Digital Output Specifications	Min	Typ	Max	
On voltage		.6	1.2	VDC
(I_o = 500 mA)				
Off leakage		1	100	µA DC
(applied V = 24 VDC)				
Maximum output current*			500	mA DC

Power Supply Requirements	Min	Typ	Max	
Logic supply (5 V from controller)		210	230	mA
Auxiliary Supply (24 V from 24 V bus)		145	180	mA

*All digital outputs are short circuit and over-current protected.

For More Information

Further detailed information about the 2220 Analog Input/Output module, 2600XM or 2700 controllers, the Quickstep programming language or any other CTC product may be obtained from our staff of Systems Specialists. Call or email for additional information.

Control Technology Corporation
25 South Street
Hopkinton, MA 01748

Telephone (508) 435-9595
Toll Free   (800) 282-5008
FAX   (508) 435-2373
email   help@control.com

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