Analog Interface Module

Integrates thermocouple, 4-20 mA, and ±10 VDC I/0

Control Technology Corporation

25 South Street
Hopkinton MA 01748
800.282.5008
www.ctc-control.com

- **Combines thermocouple, 4-20mA, and ±10 VDC I/O on single board**
- **Tuning from operator console with no programming**
- **Supports up to 88 independent PID loops per controller**

Totally integrated temperature control

The Analog Interface Module integrates every aspect of your temperature control application into a single system. When used with CTC's Model 2220-102 Analog Module, it integrates up to eight independent temperature zones, or loops, per module and 88 loops per controller. Users have the option to choose a different output strategy — analog or PWM (Pulse Width Modulation) — for each loop. The Analog Interface Module combines thermocouple (type J or K), 4- 20 mA, and ±10 VDC channels into a unified, easy-to-manage control strategy that can be further integrated with motion, digital, and analog I/O. This enables the Analog Interface Module to fit into many hybrid batch/discrete applications as an integral, off-the-shelf solution that is unmatched by many more costly systems. For further flexibility, several different card configurations are available to meet your application's unique demands.

The Analog Interface Module extends integration beyond the control box to the operator console and higher systems in the enterprise. The operator's touch screen interface has direct access to the PID (Proportional Integral Derivative) registers for each temperature loop, for on-the-fly tuning with no programming required. Through Ethernet or RS-232 connections, data from the Analog Interface Modules may be integrated at higher levels — for process validation, quality analysis and other reporting purposes — easily and cost-effectively.

Easy installation, design, and operation

The Analog Interface Module also features easy, DIN rail mountable installation and interface cables that provide "plug and play" connectivity to CTC's Model 2220 Analog Module. Users have several options for system design and loop tuning: directly from the operator interface, by invoking CTC's Autotune feature, or by manipulating tuning parameters in the Quickstep™ programming environment. In addition to PID parameters, registers for other aspects of temperature control — such as input and output scaling and emergency shutdown — are also directly accessible from the touch screen, enabling the authorized operator to quickly diagnose and resolve any temperature anomalies.

Other Specifications

Supported Controllers

Model #	Max # Inputs
2600XM*	80
2700	88

Supported Analog Modules

Model #	Max # Inputs
2220*	8
2220-102**	8
2220-103	8

*PID blocks not supported.
**includes 1 Hz filter; recommended for temperature control.

Refer to Models 2334/2335 Analog Interface Module Installation Guide for additional notes on these specifications. All specifications listed are at 25°C unless otherwise specified.

More Information

To receive further detailed information about Control Techology products, contact our Systems Specialists at:

Control Technology Corporation

25 South Street
Hopkinton MA 01748

Phone: 508.435.9595
Toll Free: 800.282.5008
Fax: 508.435.2373
Email: help@ctc-control.com
Web: www.ctc-control.com

Analog Interface Module Specifications

	Configurable Inputs				Configurable Outputs			Fixed Inputs		Fixed Outputs
Model	Thermo-couple (J or K)	Current 4-20 mA	Voltage ±10VDC	#Input Channels	Current 4-20 mA	Voltage ±10VDC	#Output Channels	#Voltage Inputs ±10VDC	#Voltage Outputs ±10VDC	#Digital Outputs 24 VDC
2334-J	J	Yes	Yes	4	Yes	Yes	4	4	4	8
2334-K	K	Yes	Yes	4	Yes	Yes	4	4	4	8
2335-J	J	Yes	Yes	8	N/A	N/A	N/A	N/A	8	8
2335-K	K	Yes	Yes	8	N/A	N/A	N/A	N/A	8	8
2335	N/A	Yes	Yes	8	N/A	N/A	N/A	N/A	8	8

Description	Min.	Typical	Max.	Units
Absolute Maximum Ratings				
+Vs to -Vs			36	V
Common-Mode Input Voltage	(-Vs-0.15)		+ Vs	V
Differential Input Voltage	-Vs		+Vs	V
Output Short-Circuit to Common		Indefinite		
Thermocouple Temperature Range				
Type J	-200		+750	°C
Type K	-200		+1250	°C
Temperature Measurement (Specified Temperature Range +25°C to +100°C)				
Calibration Error	-4		+4	°C
Stability vs. Temperature		±0.02	±0.05	°C/°C
Gain Error	-1.5		+1.5	%
Nominal Transfer Function		10		mV/°C
Amplifier Characteristics				
Input Offset Voltage				
Type J		(°Cx53.21)+235		µV
Type K		(°Cx41.27)-37		µV
Input Bias Current		0.1		µA
Differential Input Range	-10		+50	mV
Common-Mode Range	(-Vs-0.15)		(+Vs-4)	V
Common-Mode Sensitivity-RTO			10	mV/V
Power Supply Sensitivity-RTO		1	10	mV/V
Usable Output Current	±5		mA	
3 dB Bandwidth		15		kHz
Analog Output Specifications				
Output Voltage Range	-10.000		+10.000	VDC
Output Resolution		2.44		mV
Output Settling Time				
-10.000 to +10.000 V		0.2		ms
0 to 5.000 V		0.1		ms
Analog Input Specifications				
Differential Input Range	-10.000000		10.000000	VDC
Common Mode Voltage Range	-10		+10	VDC
Input Resistance		10		MW
Input Resolution (15-Bit)		.00305		%FS
Input Accuracy (25°C, 8-Sample Filtering)		.00305		%FS
Input Conversion Time (Asynchronous)		2.083		ms
Input Filter Settings (Default = 1 Sample)	2.083		533.248	ms
Dedicated Digital Output Specifications				
On Voltage (Io = 500 mA)		1	1.5	VDC
Off Leakage (Applied Voltage = 24 VDC)		1	100	µA DC
Maximum Output Current[1]			500	mA DC

Note:
1. All digital outputs have short-circuit and overcurrent protection.