Control Technology Corporation
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Data Sheet
5100-J Analog Input Module
Four ±100 mVDC / Thermocouple Analog Inputs

AI ±100mVDC J
4 Analog Inputs

Description

- Four 13-bit, ±100 mVDC analog inputs
- Three differential-ended inputs (grounded tip TC) and one single-ended input (ungrounded tip TC)
- Thermocouple linearization algorithms: E, K, J, R, S, T
- Analog input circuitry is electrically isolated from CPU and communications electronics via optical isolators and DC-to-DC converters
- On-board input averaging, 64 samples per analog input

5100-J Specifications

Parameter	Value	Description
General		
Number of inputs	4	Three differential-ended inputs and one single-ended input
Connection type	Screw terminal	Screw terminal spring clamp accepts #14-22 AWG wire. Terminated connector may also be unplugged.
Input type	±100 mVDC	
Linearization Algorithms (Channel Configurable)	E, K, J, R, S, T	Thermocouple Linearization Algorithms For additional TC algorithms, please contact Control Technology Corp.
Resolution	13-bit 0.1°	Straight Voltage Measurements: 1 in 8192 counts; 24.4 uV/LSB Temperature Measurements
Engineering units (User Configurable)	±10,000 ±100,000 C, F, K	Integer numbers used by the Model 5100 to represent the input value. 10000 = +100.00 mVDC (Default) 100000 = +100.000 mVDC (±99,999,999 = over/under range) 250 = 25.0 °C (±99,999,999 = over/under range)
Isolation rating	500 VDC	Isolation voltage between any input and other sensitive 5100 circuitry.
Input protection	±15 VDC	Absolute continuous input voltage
Input impedance:		
+Ain to –Ain	10^{12} Ω	The impedance between the positive and negative inputs.
+Ain to ACOM	10^{12} Ω	The impedance between the input and analog ground.
-Ain to ACOM (Ain#1-3)	1.5MΩ	The impedance between the positive input and analog common.
+Ain to ACOM (CJT)	287 Ω	The impedance between the CJT input and analog common.
+5 VDC supply current	0.2 mA	Current requirements from the 5100's +5 VDC power supply.
Model type	5131	Identifier for the hardware and software type
Performance		
Full scale calibration error Ta=25°C Ta=Full range	 ±2 LSB; ±1° ±4 LSB; ±2°	The error between the measured input voltage and a true +10.000000 VDC. Temperature specifications are for J, T, and E thermocouples only.
Offset calibration error Ta=25°C Ta=Full range	 ±1 LSB; ±1° ±2 LSB; ±2°	The error between the measured input voltage and a true 0.000000 VDC. Temperature specifications are for J, T, and E thermocouples only.
Integral linearity error Ta=25°C Ta=Full range	 ±3 LSB; ±2° ±6 LSB; ±4°	The maximum error in the measured input voltage across the entire input range. Temperature specifications are for J, T, and E thermocouples only.
Digital input filter size	64 samples	The number of samples used in an input's average calculation.
Filter sample rate	400 µSec	The rate in which all analog input channels are sampled.
Environmental		
Temperature: Operating Storage	0 to 50°C -25 to 85°C	Refer to the 5100 Controller Data Sheet Guide for proper mounting instructions.

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Doc. No. 950-513104-0003.doc
Minimum Hardware Revision: A
Minimum Module Firmware Revision: 1.01
Minimum 5100 Operating System Revision: 4.04.12

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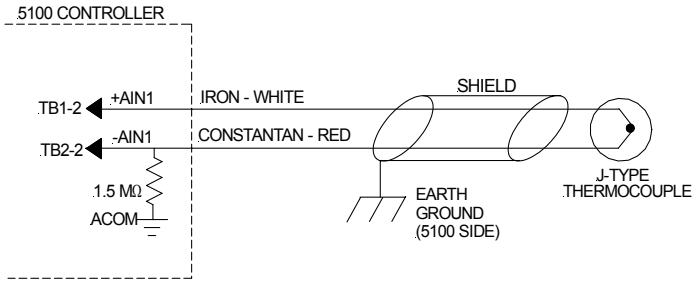
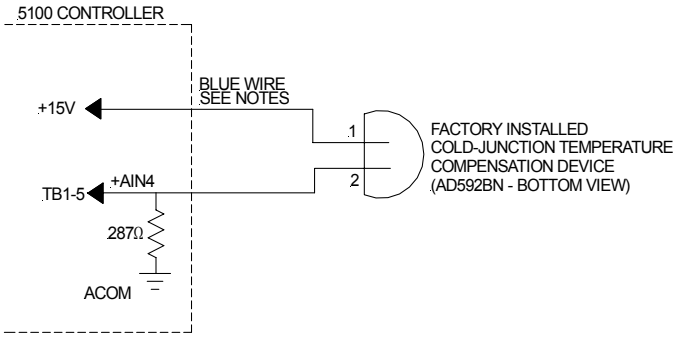
Application Information

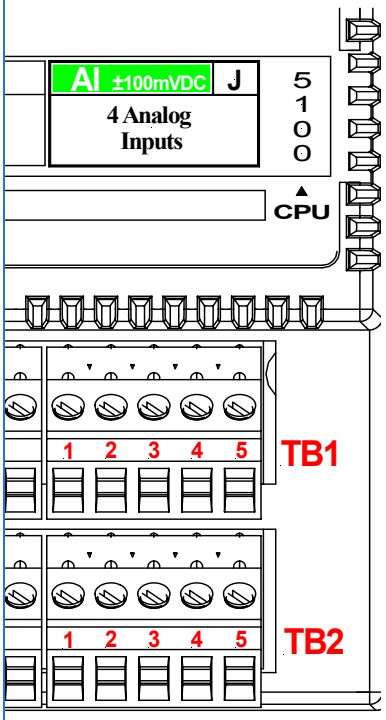
Typical Application



Cold Junction Temperature Compensation



Module Identification



Thermocouple Specifications

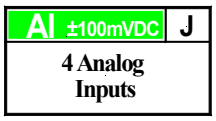
TYPE	+ AIN		- AIN		RANGE (°C)	
E	WHITE	CHROMEL	RED	CONSTANTAN	-250	980
J	WHITE	IRON	RED	CONSTANTAN	-190	1180
K	YELLOW	CHROMEL	RED	ALUMEL	-200	1360
R	BLACK	PLATINUM (13%) RHODIUM	RED	PLATNUM	-40	1740
S	BLACK	PLATINUM (10%) RHODIUM	RED	PLATINUM	-40	1750
T	BLUE	COPPER	RED	CONSTANTAN	-180	390

I/O Terminations

TB1-1	VS_OUT
TB1-2	+AIN #1
TB1-3	+AIN #2
TB1-4	+AIN #3
TB1-5	+AIN #4
TB2-1	VS_RTN
TB2-2	-AIN #1
TB2-3	-AIN #2
TB2-4	-AIN #3
TB2-5	ACOM

Notes

1. Shield grounds must be terminated on the 5100-controller side of the cable.
2. For register and programming information, refer to the Model 5100 Applications Guide.
3. One AD592BN cold-junction temperature compensation device comes factory-installed in the last analog input in the system.
4. For other thermocouple types, please contact Control Technology Corp.
5. VS refers to the voltage supply of the controller.
6. For new designs, CTC recommends using module 5100-I instead of this module.



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