

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 μ V/LSB Temperature Measurements
Engineering units (User Configurable)	$\pm 10,000$ $\pm 100,000$ C, F, K	Integer numbers used by the Model 5100 to represent the input value. 10000 = +100.00 mVDC (Default) 100000 = +100.000 mVDC ($\pm 99,999,999$ = over/under range) 250 = 25.0 °C ($\pm 99,999,999$ = 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	$10^{12} \Omega$	The impedance between the positive and negative inputs.
+Ain to ACOM	$10^{12} \Omega$	The impedance between the input and analog ground.
-Ain to ACOM (Ain#1-3)	1.5M Ω	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; $\pm 1^\circ$ ± 4 LSB; $\pm 2^\circ$	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; $\pm 1^\circ$ ± 2 LSB; $\pm 2^\circ$	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; $\pm 2^\circ$ ± 6 LSB; $\pm 4^\circ$	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 μ Sec	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.

AI ±100mVDC	J
4 Analog Inputs	

Data Sheet

5100-J Analog Input Module

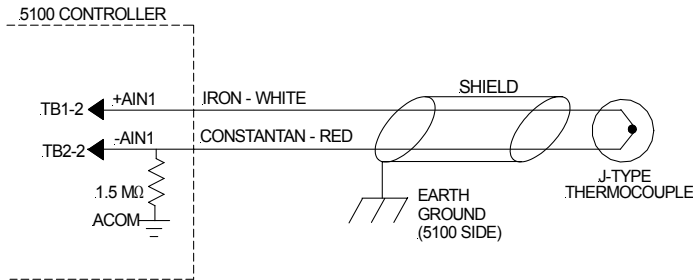
Four ±100 mVDC / Thermocouple Analog Inputs



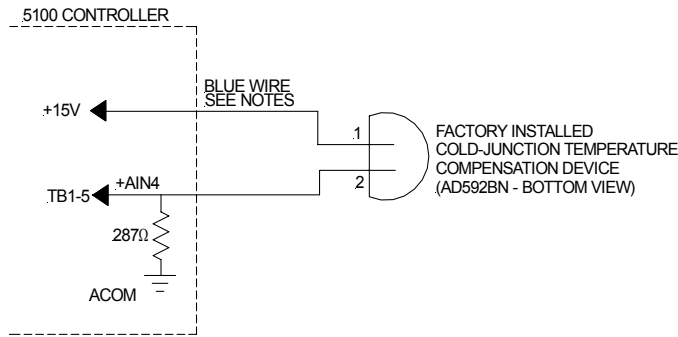
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Application Information

Typical Application



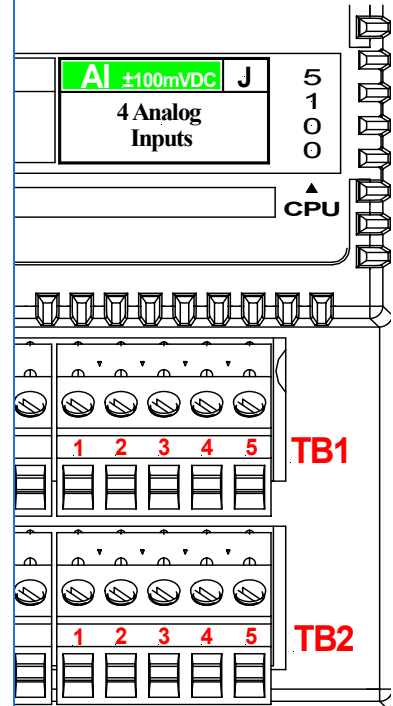
Cold Junction Temperature Compensation



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 RHODIUM ^(13%)	RED	PLATNUM	-40	1740
S	BLACK	PLATINUM RHODIUM ^(10%)	RED	PLATINUM	-40	1750
T	BLUE	COPPER	RED	CONSTANTAN	-180	390

Module Identification



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

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



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AI ±100mVDC	J
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Data Sheet
5100-J Analog Input Module
Four ±100 mVDC / Thermocouple Analog Inputs



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