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Data Sheet

M1-31B Analog Input Module

Four ± 20 mVDC Analog Inputs



Data Sheet: M1-31B Analog Input Module

Description

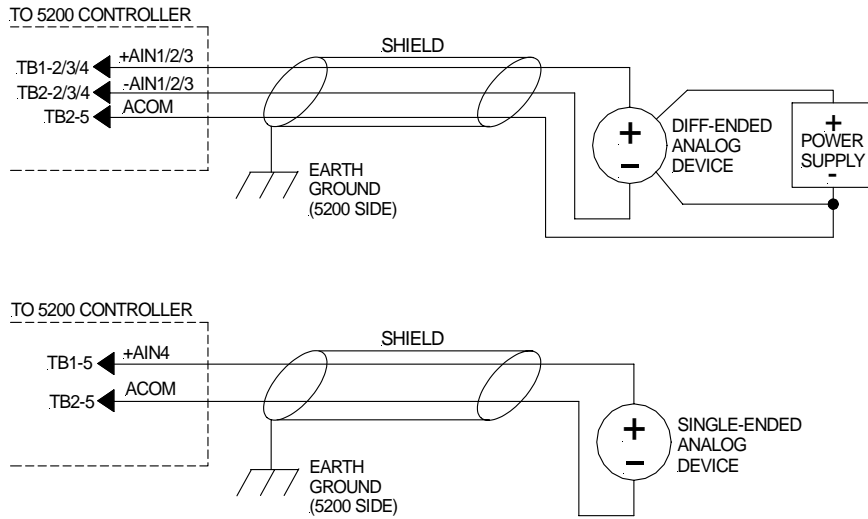
- ▶ Four 13-bit, ± 20 mVDC bipolar analog inputs
- ▶ Three differential-ended inputs and one single-ended input
- ▶ Analog input circuitry is electrically isolated.
- ▶ On-board input averaging, 64 samples per digital input

M1-31B Specifications

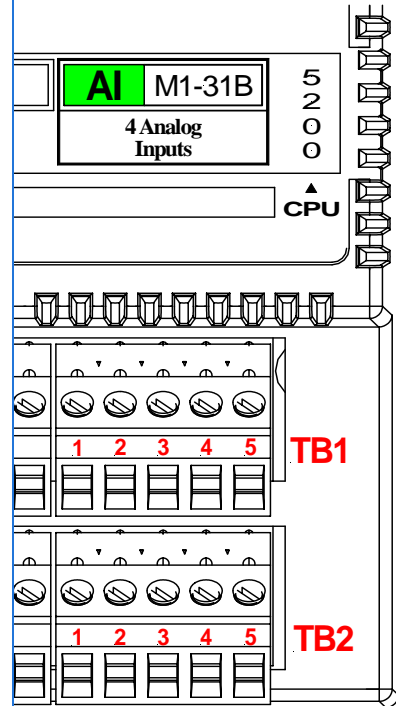
Parameter	Value	Description
General		
Number of inputs	4	Three differential-ended inputs and one single-ended input
Connection type	Screw terminal	Screw terminal spring clamp accepts #14-22 AWG wire. Terminated connector may also be unplugged.
Input type	± 20 mVDC	
Resolution	13-bit	1 in 8192 counts; 4.88 μ V/LSB
Engineering units (Channel configurable)	$\pm 20,000$ $\pm 10,000$ $\pm 10,000,000$	Integer numbers used by the 5200 to represent an input value +20.000 mVDC = 20,000 ($\pm 99,999,999$ = over/under range) +20.000 mVDC = 10,000 (Default) 20.000 mVDC = 10,000,000
Signal type		
Analog inputs #1-3	Diff.-ended	The input reading is the current difference between +AINx and -AINx.
Analog input #4	Single-ended	One input terminal is referenced to analog common (ACOM).
Common mode voltage	± 15 VDC	The maximum input voltage in reference to analog common (ACOM)
Isolation rating	500 VDC	Isolation voltage between any input and other sensitive 5200 circuitry
Input protection	± 40 VDC	Absolute maximum 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 common
- Ain to ACOM (Ain#1-3)	1.5M Ω	The impedance between the positive input and analog common
+5 VDC supply current	0.2 mA	Current requirements from the 5200's +5 VDC power supply
Performance		
Full scale calibration error		The error between the measured input voltage and a true +10.000000 VDC
Ta=25°C	± 2 LSB	
Ta=Full range	± 4 LSB	
Offset calibration error		The error between the measured input voltage and a true 0.000000 VDC
Ta=25°C	± 2 LSB	
Ta=Full range	± 4 LSB	
Integral linearity error		The maximum error in the measured input voltage across the entire input range
Ta=25°C	± 3 LSB	
Ta=Full range	± 6 LSB	
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 at which all analog input channels are sampled
Environmental		
Temperature	Operating Storage	0 to 50°C -25 to 85°C
Refer to the 5200 Controller Data Sheet for proper mounting instructions.		

Application Information

Typical Application



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 (S.E.)
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 5200 controller side of the cable.
2. When an analog device is powered via an external power source, it may be necessary to tie the ground of this power source to the module's analog common (ACOM) to limit common mode voltages.
3. For register and programming information, refer to the Model 5200 Applications Guide.
4. VS refers to the voltage supply of the controller.

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