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Data Sheet
M1-30B Analog Combo I/O Module
Two ±20 mVDC Analog Inputs
Two ±10 VDC Analog Outputs

AI/O M1-30B
2 Analog Inputs
2 Analog Outputs

Description

- Two 13-bit, ±20 mVDC bipolar, differential-ended, analog inputs
- Two 12-bit, ±10 VDC bipolar, single-ended, analog outputs
- Analog input circuitry is electrically isolated.
- On-board input averaging, 64 samples per digital input

M1-30B Specifications

Parameter	Value	Description
General		
Number of inputs	2	Two differential-ended analog inputs at ±20 mVDC
Number of outputs	2	Two single-ended analog outputs at ±10 VDC
Connection type	Screw terminal	Screw terminal spring clamp accepts #14-22 AWG wire. Terminated connector may also be unplugged.
Resolution Inputs Outputs	 13-bit 12-bit	 1 in 8192 counts; 4.88 µV/LSB 1 in 4096 counts; 4.88 mV/LSB
Engineering units (Channel configurable)	 ±20,000 ±10,000 ±10,000,000	Integer numbers used by the 5200 to represent an input value +20.000 mVDC = 20,000 (±99,999,999 = over/under range) +20.000 mVDC = 10,000 (Default) 20.000 mVDC = 10,000,000
Signal type Inputs Outputs	 Diff.-ended Single-ended	 The input reading is the voltage difference between +AINx and –AINx. Both output voltages are in reference 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 I/O and other sensitive 5200 circuitry
Input protection	±40 VDC	Absolute maximum input voltage
Input impedance +Ain to –Ain +/-Ain to ACOM	 10^{12} Ω 10^{12} Ω	 The impedance between the positive and negative inputs The impedance between either input and analog common
Maximum output current	±5 mA	The maximum current that any given analog output can continuously sink or source
+5 VDC supply current	0.2 mA	Current requirements from the 5200's +5 VDC power supply
Performance		
Full scale calibration error Ta=25°C Ta=Full range	 ±2 LSB ±4 LSB	The error between the measured input/output voltage and a true +20.000000mV/+10.000000 VDC
Offset calibration error Ta=25°C Ta=Full range	 ±2 LSB ±4 LSB	The error between the measured input/output voltage and a true 0.000000 VDC
Integral linearity error Ta=25°C Ta=Full range	 ±3 LSB ±6 LSB	The maximum error in the measured input/output voltage across the entire input/output range
Digital input filter size	64 samples	The number of samples used in an input's average calculation
Filter sample rate	400 µSec	The rate at which both analog input channels are sampled
Output slew rate	±10 V/µSec	The maximum slope of an output signal change
Environmental		
Temperature Operating Storage	0 to 50°C -25 to 85°C	Refer to the Model 5200 Controller Data Sheet for proper mounting instructions.

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Doc. No. 950-513006-0002.doc
Minimum Hardware Revision: E
Minimum Module Firmware Revision: 1.07
Minimum 5200 Operating System Revision: 5.06

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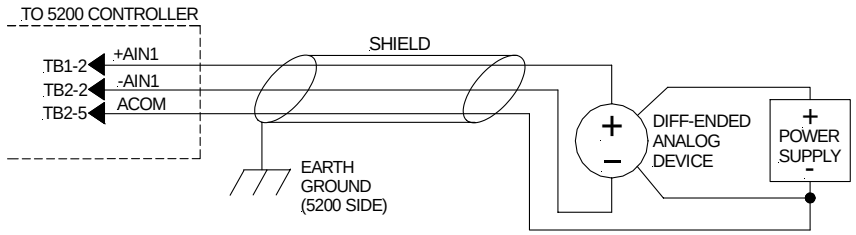
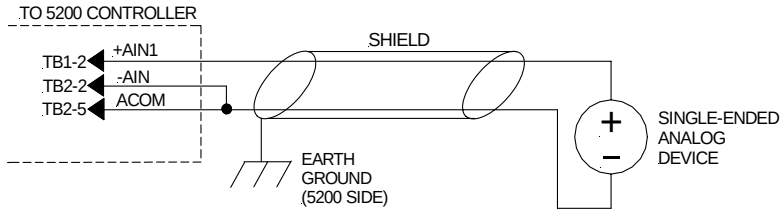
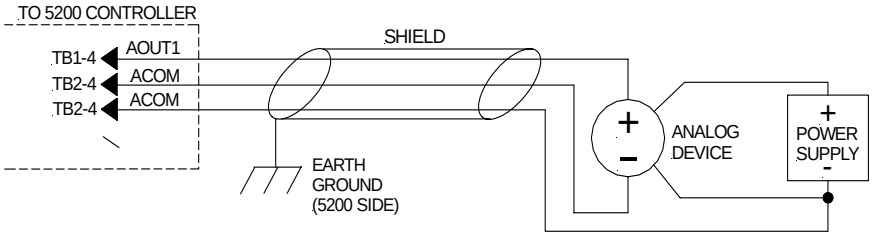
Application Information

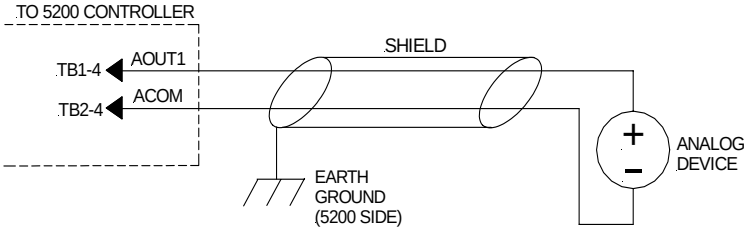
Typical Analog Input Application



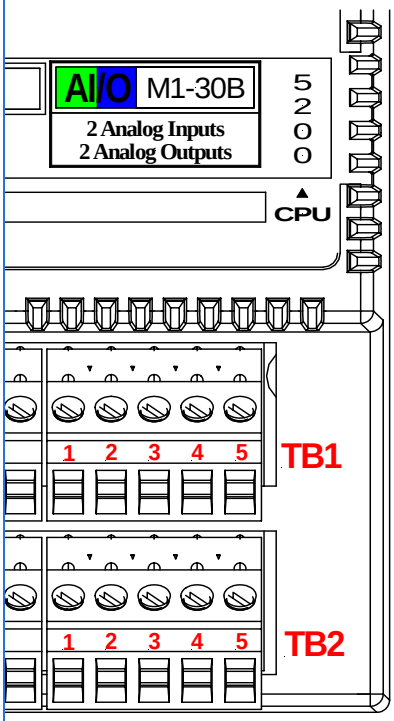


Typical Analog Output Application





Module Identification



I/O Terminations

TB1-1	VS_OUT
TB1-2	+Ain #1
TB1-3	+Ain #2
TB1-4	Aout #1
TB1-5	Aout #2
TB2-1	VS_RTN
TB2-2	-Ain #1
TB2-3	-Ain #2
TB2-4	ACOM
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 5200 controller.