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Data Sheet

5100-Q Analog Combo I/O Module

Two ± 20 mVDC Analog Inputs
Two ± 10 VDC Analog Outputs

AI	O	± 20 m/10V	Q
2 Analog Inputs		2 Analog Outputs	

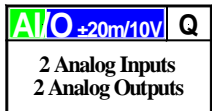
Data Sheet: 5100-Q Analog Combo I/O Module

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

5100-Q 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 μ V/LSB 1 in 4096 counts; 4.88 mV/LSB
Engineering units (Channel Configurable)	$\pm 20,000$ $\pm 10,000$ $\pm 10,000,000$	Integer numbers used by the 5100 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	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 IO and other sensitive 5100 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 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 5100's +5 VDC power supply.
Module type	5130	Identifier for the hardware and software type
Performance		
Full scale calibration error		
Ta=25°C	± 2 LSB	The error between the measured input/output voltage and a true $+20.000000$ mV/ $+10.000000$ VDC.
Ta=Full range	± 4 LSB	
Offset calibration error		
Ta=25°C	± 2 LSB	The error between the measured input/output voltage and a true 0.000000 VDC.
Ta=Full range	± 4 LSB	
Integral linearity error		
Ta=25°C	± 3 LSB	The maximum error in the measured input/output voltage across the entire input/output range.
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 both analog input channels are sampled.
Output slew rate	± 10 V/ μ Sec	The maximum slope of an output signal change.
Environmental		
Temperature	Operating Storage	0 to 50°C -25 to 85°C
		Refer to the Model 5100 Controller Data Sheet for proper mounting instructions.



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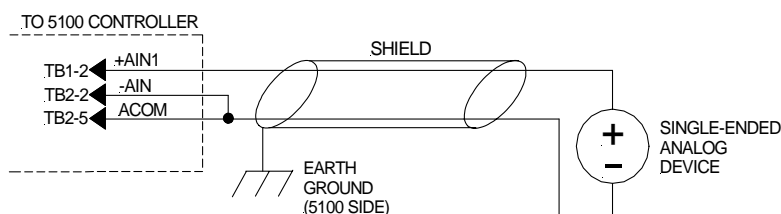
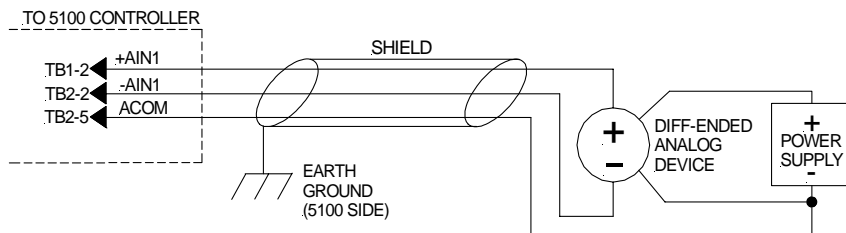


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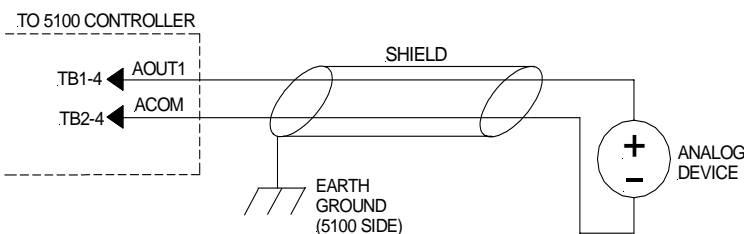
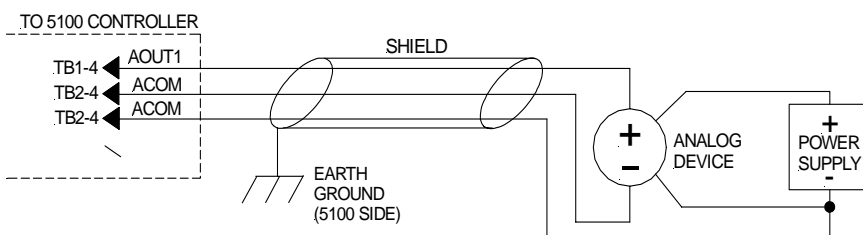
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Application Information

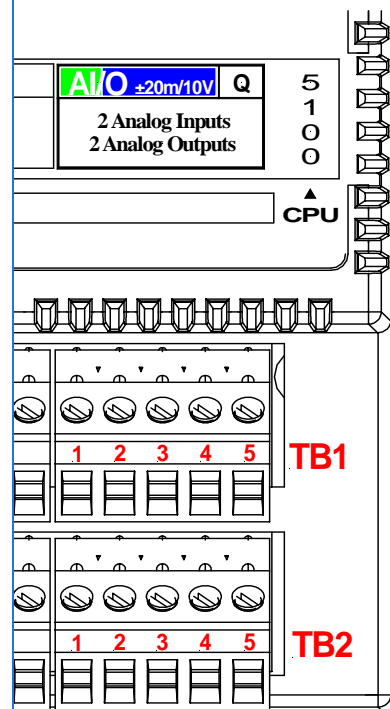
Typical Analog Input Application



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



- Shield grounds must be terminated on the 5100-controller side of the cable.
- 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.
- For register and programming information, refer to the Model 5100 Applications Guide.
- VS refers to the voltage supply of the 5100 controller.

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