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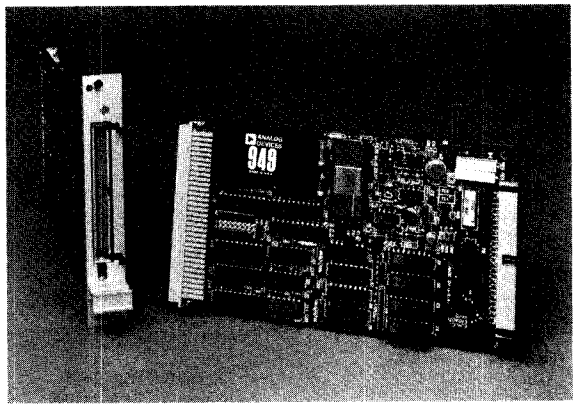
Low Cost VMEbus Compatible Analog I/O Boards

RTI-600 Series

FEATURES
RTI-600 ANALOG INPUT BOARD
32SE/16D Input Channels
User Configurable Gains of 1 to 1000
12-Bit A/D Resolution (AD574)

RTI-602 ANALOG OUTPUT BOARD
4 Analog Output Channels
12-Bit D/A Resolution (AD7541)
Optional 4-20mA Output

GENERAL
Low Cost
Compatible with All VME Microcomputers
Interfaces through Primary Connector (P1)
Memory Mapped into VME Short I/O Address Space
Single Eurocard Format (100 × 160mm)
Single +5V Power Requirement
0 to +70°C Temperature Range



GENERAL DESCRIPTION

The RTI-600 Series products from Analog Devices are high performance analog input and output boards compatible with the VMEbus. They provide a cost effective and convenient means of interfacing your microcomputer to the real (i.e., analog) world. The boards feature 12-bit resolution, programmable gain for low-level signals, analog channel expansion, 4-20mA outputs, and on-board dc/dc converter.

The series consists of an analog input board (RTI-600) and an analog output board (RTI-602); each of which interfaces to the VMEbus P1 connector, as a block of contiguous address locations (memory mapped interface) in the VMEbus short I/O address space.

The RTI-600 Analog Input Board provides data acquisition for 16 single-ended or 8 differential channels with optional expansion to 32 single-ended or 16 differential. The instrumentation amplifier is user configurable for gains of 1 to 1000. Combining this with a sample-hold circuit and 12-bit A/D converter, the data acquisition section features ±0.01% accuracy, 12-bit resolution and conversion rates up to 25kHz. The RTI-602 Analog Output Board uses four, 12-bit D/A converters to provide independently programmed voltage output channels. In addition, two channels can be configured for 4-20mA outputs by using optional voltage to current converters which install on the board.

Analog signal connections are made using reliable socket and header connectors which enables flat ribbon cable to be combined with gas tight and corrosion resistant connectors. An optional screw termination panel is also offered for simple and convenient field wire connections.

All boards are single height (100 × 160mm), require +5V power and have an operating temperature range of 0 to +70°C.

OPTIONAL SIGNAL CONDITIONING

For low-level analog signal conditioning such as sensor-based applications, Analog Devices 3B Series Signal Conditioning I/O Subsystem offers rail-mounted industrial hardened analog signal interface modules with a single channel format and high level analog output. Optional sensor signal conditioning, transformer isolation of ±1500V, high common-mode and normal-mode noise rejection and 130V input protection makes the 3B series an ideal for analog input and output signal conditioning for the RTI-600 series.

Whether you require sensor signal conditioning, analog I/O boards or both, Analog Devices is the source of the widest selection of solution for any measurement and control application control application. They are key elements in factory automation, process control, laboratory applications as well as OEM usages.

17

		INPUT				OUTPUT		
		Channel Capacity			A/D		D/A	4-20mA
Card Type	Model No.	STD	OPT	Gain Range	Resolution	Channel Capacity	Resolution	(OPT)
Analog Input	RTI-600	16SE/8D	32SE/16D	1-1000	12 Bits	← N/A →		
Analog Output	RTI-602	← N/A →				4	12 Bits	2

RTI-600/602 Function Chart

This two-page data summary contains key specifications to speed your selection of the proper solution for your application. Additional information on this product can be obtained from your local sales office.

SPECIFICATIONS (typical @ +25°C with nominal supply voltage unless otherwise noted)

RTI-600 ANALOG INPUT CARD	
Number of Input Channels	16 Single-Ended or 8 Differential (Jumper Selectable) Expandable to 32 Single-Ended or 16 Differential using two plug-in multiplexers (ADI Part #OA10)
Input Overvoltage Protection[1]	±35V (Dielectrically Isolated)
Input Impedance	$>10^8\Omega$
Input Current	±50nA
Analog Connector	50 pin IDE
A/D Input Ranges[2]	0 to +10V, ±10V
A/D Resolution	12 Bits (4096 Counts)
A/D Output Codes[2]	Binary, Offset Binary, Two's Complement
Instrumentation Amplifier Gain Ranges	1 to 1000V/V (Resistor Programmable Gain)
Gain Equation	$G = 1 + \frac{20k\Omega}{R_G}$
A/D Conversion Time	25µs
System Throughput[3]	25,000 Channels/sec (G<150) 20,000 Channels/sec (150<G>300) 11,000 Channels/sec (G = 1000)
Common Mode Voltage (CMV)	±10V min
Common Mode Rejection (CMR)	78dB
Linearity	±1/2LSB
Differential Nonlinearity	±1LSB
Total System Errors	±0.01% of FSR (G = 1 to 10) ±0.05% of FSR (G = 100) ±0.1% of FSR (G = 1000)
Temperature Coefficient	
Gain	±30ppm/°C of FSR (G = 1)
Offset	±100ppm/°C FSR (G = 1000) ±10ppm/°C FSR (G = 1) ±100ppm/°C of FSR (G = 1000)
RTI-602 ANALOG OUTPUT CARD	
Number of Output Channels	4
D/A Resolution	12 Bits (4096 Counts)
D/A Input Codes[2]	Binary, Offset Binary
Output Voltage Range[2]	0V to +5V, 0V to +10V, ±5V, ±10V @ 5mA
Output Current Range[4]	4-20mA using 2 V/I converters
(Optional–2 Channels Only)	(ADI Part #OA08)
Analog Connector	26 pin IDE
Nonlinearity	±1/2LSB
Differential Nonlinearity	±1/2LSB
Output Settling Time	25µs (to ±1/2LSB)
Gain Error (Adjustable to Zero)	±0.01% of FSR
Offset Error (Adjustable to Zero)	±0.02% of FSR
Temperature Coefficient	
Gain	±15ppm/°C of FSR
Offset	±25µV/°C
INTERFACE PARAMETERS	
Compatibility	Meets all electrical and mechanical VMEbus specifications
Implementation	Memory mapped I/O, compatible with all CPU types
Address Selection	
RTI-600	2 contiguous bytes in a 256 byte block. (Jumper selectable in the VMEbus short I/O space)
RTI-602	8 contiguous bytes in a 256 byte block (Jumper selectable in the VMEbus short I/O space)
POWER REQUIREMENTS	
RTI-600	+5V ±5% @ 650mA typ, 700mA max
RTI-602	+5V ±5% @ 550mA typ, 650mA max (on-board dc/dc converter generates an isolated ±15V to power the data acquisition components.)
TEMPERATURE	
Operating	0 to -70°C
Storage	-55°C to +85°C
RELATIVE HUMIDITY	Meets or exceeds MIL-STD 202 Method 103

NOTES
[1]Specified with power applied, ±20V with power off.
[2]User selectable with wire-wrap jumpers.
[3]Does not include CPU latency time. Throughput = multiplexer + amplifier settling time + A/D conversion time.
[4]Solder in option, +16V to +30V loop power required.
FSR = Full Scale Range.

Specifications subject to change without notice.

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