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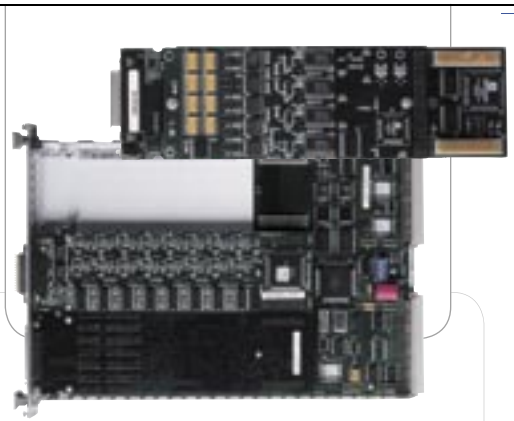
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VM2608 8-channel 16-bit Digitizer (VMIP™)
VM2616 16-channel 16-bit Digitizer (VMIP™)

Features

16 Independent 16-bit A/D Converters per Instrument

Each Channel has its own Instrumentation Amplifier for a True Differential Input

Up to 48 A/D Converters per VXIbus C-size Slot

Flexible Triggering Capability

±0.1 V to ±40 V Input Ranges and up to 100 kHz Sampling Rate per Channel

SCPI Compatible

VXI*plug&play* Drivers

Overview

The VM2616 digitizer provides 16 independent channels of an analog to digital converter (ADC) with 16 bits of resolution and a sample rate of up to 100 kSa/s per channel. Each channel consists of an independent ADC combined with its own instrumentation amplifier, providing a true differential input.

Each group of four channels has a separate bank of memory which can be allocated to one, two, three or four converters. This allows for the most efficient use of the available memory.

This module is part of the VMIP™ family of instruments and can be combined with up to two other modules (i.e., D/A, digital I/O, time stamp, etc.) to form a high-density VXIbus instrument. Three VM2616s can be installed in a single-wide C-size module giving 48 independent channels of A/D.

Data Acquisition

The input data is acquired when a conversion trigger event occurs from one of the four following methods:

1. Trigger source from the front panel input: This input has a ±10 V input range, and may be programmed to trigger on either the rising or falling edge of this signal, and at a specified voltage level with a 12-bit resolution and 1% accuracy.

2. Trigger source from the VXI TTL trigger bus: Any one of the eight TTL trigger bus lines may be selected as the trigger source. The unit may be programmed to trigger on either the rising or falling edge of this signal.

3. Trigger upon receipt of a word serial command: When this mode is selected, the ADCs will convert when a word serial command is received by the instrument.

4. Trigger from one of the 16 input channels: One of the input channels can be selected to trigger the board. It can be programmed to trigger during a rising or falling edge, and also at a specified voltage with 12 bits of resolution and 1% of range accuracy.

The trigger event causes all channels to convert simultaneously, and pre- and post-triggering is available for added flexibility. The VM2616 is designed for synchronous sampling, and allows the board to drive the VXIbus TTL trigger lines, enabling up to 576 independent ADCs to capture data simultaneously in a 13-slot cardcage. Since three VM2616s can be accommodated on a single C-size VXIbus card, three groups of 16-channel ADCs each can all be operating and triggering independently. For example, one can be acquiring data while another is waiting for a trigger.

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Programming and Data Access

Word Serial Message-based Data Access: In this mode, the converted data and all other functions are accessed via the VXI message-based interface. Commands are sent to query the converted values as well as to initiate functions, such as triggering a conversion or querying each channel's calibration constants. The VM2616 can return data in ASCII, and can also return the maximum, minimum, average, pk to pk, TRMS value, and maximum negative or positive transition between two samples.

Pseudo-Register Data Access: In this mode, the data is accessed as in any register-based VXI module, but is different in that the local microprocessor performs additional functions before passing data to the host controller. The data is then loaded into the user-definable VXI registers for access.

To further ease programming, VXI*plug&play* drivers are provided.

Calibration

The calibration constants used to correct the data values are stored in non-volatile memory. These constants are determined when the instrument is calibrated and can be changed as necessary (such as during routine calibration cycles or when the user selects a new gain setting and wishes to set the gain accurately). These constants may also be queried at any time via a word serial query and altered via a word serial command. All calibration is done using calibration DACs to adjust the gain and offset of each channel. This eliminates the need for removing covers from the unit and allows for automated calibration.

Specifications

Resolution: 16 bits, 15 bits monotonic

Signal Input Type: Differential

Signal Input Coupling: dc

Signal Input Impedance: >10 MΩ, in 0.1 V, 1.0 V, 10 V range. 400 kΩ differential, 200 kΩ single ended ±1% in 0.4 V, 4.0 V, 40 V range

Accuracy

I/P Range	Common Mode I/P Range	Resolution	Accuracy	B/W
±0.1 V	±10 V	3.05 µV	±0.03%	dc-10 kHz
±0.4 V	±40 V	12.2 µV	±0.04%	dc-10 kHz
±1.0 V	±10 V	30.5 µV	±0.02%	dc-20 kHz
±4.0 V	±40 V	122 µV	±0.03%	dc-20 kHz
±10.0 V	±10 V	305 µV	±0.02%	dc-20 kHz
±40.0 V	±40 V	1.22 mV	±0.02%	dc-80 kHz

Reference Oscillator: 1 MHz derived from the VXI 10 MHz ECL clock

Sample Rate: 100 kSa/s to 9.5367 samples per second

Sample Memory: Allocated per group of four channels

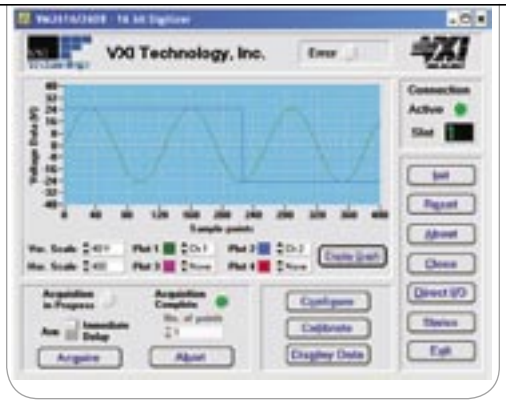
Common Mode Rejection Ratio (Typical):

I/P Range	10 Hz	1 kHz	100 kHz
±0.1 V*	110 dB	86 dB	65 dB
±0.4 V**	56 dB	50 dB	40 dB
±1.0 V*	100 dB	86 dB	50 dB
±4.0 V**	56 dB	50 dB	40 dB
±10.0 V*	90 dB	86 dB	40 dB
±40.0 V**	56 dB	50 dB	38 dB

* ≤1k Ω source unbalance
** ≤50 Ω source unbalance

Active

Channels	Standard Memory	512k Word Option
1	128 kwords (131,071)	512 kwords (524,287)
2	64 kwords (64,535)	256 kwords (262,143)
3	42.6 kwords (43,689)	170.6 kwords (174,761)
4	32k kwords (32,767)	128 kwords (131,071)



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Programming: IEEE-488.2 Instrument. SCPI compatible command set using word-serial message-based interface

Drivers: VXI*plug&play* drivers

User Connector: The user connector is a standard 44-pin female high-density D-Sub connector. A mating connector is provided with each unit

Ordering Information

VM2616	16-channel 16-bit A/D Digitizer C-size Module
VM2608	8-channel 16-bit A/D Digitizer C-size Module
	(must be configured with a VM9000 host module)
Option 2:	512 k Word Memory

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