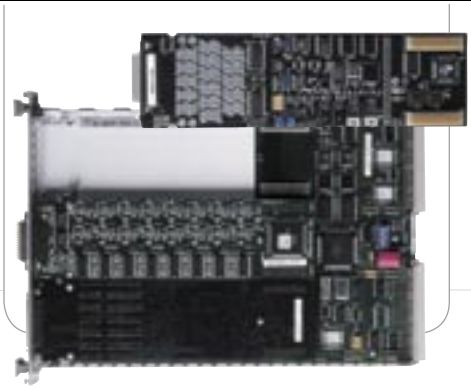
16-channel Differential Scanning Voltmeter (VMIP™)



Overview

The VM2716A provides the functionality of a 4.5 digit dc voltmeter and a FET multiplexer in a single instrument. For applications where multiple voltage points need to be measured and the overhead and cost of a full digital multimeter (DMM) and additional switch module are not necessary, the VM2716A becomes an ideal instrument.

This scanning voltmeter is part of the VMIP™ family and can be combined with up to two other instruments to form a high-density VXIbus instrument. Up to 48 differential channels can be scanned in a single C-size card at a rate of 1000 readings per second, per 16 channels, at 4.5 digits of resolution.

For applications that require fast dc voltage measurements on many channels, the price/performance value of the VM2716A scanning voltmeter makes it an ideal choice.

Programming

The scanning voltmeter is programmed using message-based word serial protocol. The commands are SCPI and IEEE-488.2 compatible. VXI*plug&play* drivers are also provided to further ease programming. For faster data access the VM2716A also supports direct register data access. The VM2716A can be programmed to scan through its channel list either upon receipt of a word serial trigger or by programming the internal sample timer from 1 ms to 512 ms.

Aperture times may also be programmed from 400 µs to 20 ms, allowing for the rejection of 50 Hz, 60 Hz, or 400 Hz noise, as well as allowing maximum throughput.

To synchronize to other instruments within the VXIbus mainframe the VM2716A can also be programmed to generate a sync pulse to any one of the TTL trigger lines upon completion of operation.

Triggering

Triggering can be accomplished via one of three sources.

1. Trigger source from the front panel input. This input is TTL compatible and is edge sensitive. The unit may be programmed to trigger on either the rising or falling edge of this signal.

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 DACs will convert when a word serial command is received by the instrument.

Features

- Up to 48 Channels per Single VXIbus C-size Slot
- Message or Register-based Data Access
- Inputs can be Scanned at a Rate of 1000 Channels per Second
- 8000 Readings On-board Memory
- Flexible Triggering
- 0.015% Accuracy
- ±0.1 V, ±1 V, and ±10 V Differential Input Ranges
- SCPI Compatible
- VXI*plug&play* Drivers

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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). They 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 the instrument. This eliminates the need for removing covers from the unit and allows for automated calibration.

Specifications

Input Ranges: ±0.1 V, ±1 V, ±10 V
(max. reading is 19.999)
±10 V range limited to 15 V for single-ended input (-ve input grounded)

Maximum Input Voltage:

Normal Mode plus Common Mode: < ±16 Vp

Maximum Common Mode Voltage: ±16 Vp

Resolution: 10 µV in 0.1 V range
100 µV in 1 V range
1 mV in 10 V range

Input Resistance: 10 MΩ from any input pin to ground

Input Over-voltage Protection: ±250 V dc or peak ac between differential input pairs
±125 V dc or peak ac from any input to ground

Accuracy @ TCAL ±5 °C: ±0.015% of range for 90 days
±0.03% of range for 1 year

Reading Rate:

Aperture	20 ms	16.66 ms	2.5 ms	400 µs
Readings/s	44	52	298	1000

Memory: 8000 Readings

CMRR: >90 dB dc-60 Hz
>75 dB up to 400 Hz
CMRR with up to 100 Ω source unbalance

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

Ordering Information

VM2716A	16-channel Differential Scanning Voltmeter (must be configured with VM9000 host module)

VM2716A