

KEYSIGHT TECHNOLOGIES (AGILENT HP)

E1411B

The Keysight (Agilent/HP) E1411B is a C-size, 1-slot, register-based VXI 5.5-digit multimeter. It is identical in electrical design to the B-size E1326B but designed for standard C-size mainframes. It features a low-noise 5.5-digit integrating A/D converter for high-accuracy measurements, alongside a 14-bit sampling A/D converter supporting reading rates up to 13 kHz. This makes the E1411B highly versatile for both precision laboratory-grade measurements and high-speed data acquisition applications. This autoranging multimeter supports Vdc, Vac, 2-wire and 4-wire resistance, and direct temperature measurements.

SPECIFICATIONS

General

Interfaces	VXIbus (Register-Based, C-size, P1/P2 Connectors)
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Physical

Power Supply	Powered by VXIbus mainframe backplane (+5 V, +12 V, -12 V, -5.2 V, -2 V)
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	30.5 mm x 262 mm x 340 mm mm

DC Voltage

DC Voltage Ranges	125 mV, 1 V, 8 V, 64 V, 300 V
DC Voltage Maximum Resolution	1 µV
DC Input Resistance (125 mV to 8 V ranges)	> 10 GΩ
DC Input Resistance (64 V and 300 V ranges)	10 MΩ ± 1%
DC Voltage Maximum Input (HI to LO)	300 VDC
Normal Mode Rejection Ratio (NMRR)	> 60 dB at 50/60 Hz
Common Mode Rejection Ratio (CMRR)	> 120 dB at DC

Resistance

Resistance Ranges	256 Ω, 2048 Ω, 16.384 kΩ, 131.072 kΩ, 1.048576 MΩ, 8.388608 MΩ
Resistance Measurement Modes	2-wire and 4-wire
Offset Compensation	Selectable on 256 Ω, 2048 Ω, and 16.384 kΩ ranges
Resistance Maximum Resolution	1 mΩ

Temperature

Supported Temperature Sensors	Thermocouples, Thermistors, RTDs
Supported Thermocouple Types	E, J, K, N, R, S, T
Supported Thermistor Types	2.2 kΩ, 5 kΩ, 10 kΩ
Supported RTD Types	100 Ω Platinum (alpha = 0.00385 or 0.003916)

Measurement Speed & Digitizing

A/D Converter Types	Integrating A/D (low noise) and Sampling A/D (high speed)
Integrating A/D Resolution	5.5 digits
Sampling A/D Resolution	14-bit
Maximum Sampling A/D Reading Rate	13 kHz (13,000 readings/s)
Integrating A/D Reading Rate (5.5 digits, 1 PLC @ 60 Hz)	60 readings/s
Integrating A/D Reading Rate (4.5 digits, 0.15 PLC @ 60 Hz)	360 readings/s
Integrating A/D Reading Rate (5.5 digits, 1 PLC @ 50 Hz)	50 readings/s
Integrating A/D Reading Rate (4.5 digits, 0.15 PLC @ 50 Hz)	300 readings/s

Triggering & Synchronization

Trigger Sources	Immediate, External, VXI Backplane (TTLTRG0-7), Software, Timer
Timer Pacer Range	10 μ s to 65.535 s
Timer Pacer Resolution	10 μ s

System & Bus Interface

VXIbus Module Size	C-size
Slot Width Requirements	1 slot
VXIbus Device Type	Register-based
Programming Protocol	SCPI (via Command Module like E1406A) or direct register programming
Software Drivers	VXIplug&play drivers, SCPI instrument driver

Environmental & Physical

Storage Temperature Range	-40 °C to 75 °C
Relative Humidity Range	Up to 95% RH (non-condensing, 0 °C to 40 °C)
Calibration Type	Software calibration (no manual internal adjustments)

Isolation

Maximum LO to Guard Voltage	200 V
Maximum Guard to Chassis Voltage	350 V

Performance

Current Measurement Support	No current measurement capability
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A/D Conversion

A/D Integration Times	1 PLC, 0.15 PLC, 0.02 PLC
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VXI Interface

VXI Logical Address Range	0 to 255 (switch selectable)
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Triggering

External Trigger Input Level	TTL (negative-edge sensitive)
Voltmeter Complete Output	TTL negative pulse

TECHNOLOGY

VXIbus Register-Based Multimeter

APPLICATIONS

Data Acquisition, Automated Test Systems (ATE), Computer-Aided Testing (CAT)

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