NATIONAL INSTRUMENTS

PXI-4070

The National Instruments PXI-4070 is a high-performance 6½-digit digital multimeter (FlexDMM) and a 300 V isolated waveform digitizer in a single-slot PXI module. It delivers exceptionally fast measurement speeds of up to 100 S/s at 6½ digits and up to 3 kS/s at 5½ digits, alongside high-precision 10-bit to 23-bit waveform acquisition up to 1.8 MS/s. Designed for automated testing, R&D, and production environments, it integrates seamlessly with NI switches for high-density, multi-channel data acquisition.

SPECIFICATIONS

General

Interfaces	PXI backplane
Display	None (Virtual front panel via host PC)

Physical

Operating Temperature	0 °C to 55 °C °C
Dimensions (W×H×D)	20 mm × 130 mm × 216 mm mm

Resolution and Display

Digits of Resolution	6½ digits
Display Type	Virtual front panel (no physical display)

DC Voltage

DC Voltage Ranges	100 mV, 1 V, 10 V, 100 V, 300 V
DC Voltage Best Accuracy	±6 ppm
DC Voltage Best Resolution	100 nV
DC Voltage Input Impedance	>10 GΩ (100 mV to 10 V ranges), 10 MΩ (100 V and 300 V ranges)
DC Voltage Normal Mode Rejection Ratio (NMRR)	>60 dB (at 50 Hz / 60 Hz)
DC Voltage Common Mode Rejection Ratio (CMRR)	>140 dB (at 50 Hz / 60 Hz)

AC Voltage

AC Voltage Measurement Type	True-RMS
AC Voltage Ranges	50 mV, 500 mV, 5 V, 50 V, 300 V
AC Voltage Frequency Range	1 Hz to 300 kHz
AC Voltage Best Resolution	100 nV
AC Voltage Input Impedance	1 MΩ in parallel with 90 pF
AC Voltage Maximum Crest Factor	4.5

DC Current

DC Current Ranges	20 mA, 200 mA, 1 A
DC Current Best Resolution	10 nA
DC Current Input Protection	F 1.25 A 250 V fast-acting fuse

AC Current

AC Current Measurement Type	True-RMS
AC Current Ranges	10 mA, 100 mA, 1 A
AC Current Frequency Range	1 Hz to 10 kHz
AC Current Best Resolution	10 nA

Resistance

Resistance Measurement Configurations	2-wire, 4-wire, 6-wire (with PXI-4022 accessory)
Resistance Ranges	100 Ω, 1 kΩ, 10 kΩ, 100 kΩ, 1 MΩ, 10 MΩ, 100 MΩ
Resistance Best Resolution	100 µΩ
Offset Compensation	Supported (Offset Compensated Ohms)

Frequency and Period

Frequency Range	1 Hz to 500 kHz
Period Range	2 µs to 1 s

Digitizer / Waveform Acquisition

Digitizer Sampling Rate	10 S/s to 1.8 MS/s
Digitizer Resolution	10 to 23 bits (flexible resolution dependent on sampling rate)
Digitizer Maximum Input Voltage	±300 V
Digitizer Bandwidth	300 kHz
Digitizer Input Coupling	DC

System Speed and Performance

Reading Rate at 6½ Digits	100 S/s
Reading Rate at 5½ Digits	3 kS/s
Integration Time	Variable (software-programmable)
Guarding Module Accessory	NI PXI-4022 (enables 6-wire resistance & picoampere measurements)
Recommended Switch Modules	NI PXI-2527 (64-channel 300 V multiplexer), NI PXI-2530 (128-channel reed relay multiplexer)

Triggering and Math Functions

Trigger Sources	PXI Trigger lines, PXI Star Trigger, Immediate, Software, External (via PXI chassis)

Power and Environmental

Storage Temperature Range	-40 °C to 70 °C
Operating Humidity Range	10% to 90% RH (non-condensing)
Warm-up Time	60 minutes
Calibration Interval	1 year
Measurement Category (CAT) Rating	CAT I (300 V)
Overvoltage Protection	300 VDC/VAC

Physical Characteristics

Form Factor	3U PXI (1 slot)
Front Panel Connectors	4 Banana jacks (HI, LO, HI Sense, LO Sense)

Power

PXI Backplane Power Draw (+5 V)	1.1 A max
PXI Backplane Power Draw (+12 V)	150 mA max

Interfaces

Bus Connector	32-bit PXI/cPCI

Safety & Protection

Maximum Common-Mode Voltage	300 V DC or AC rms (between LO and Earth Ground)

Measurements

Diode Test Current	1 mA (fixed)
Supported Temperature Sensors	RTD (Pt100, Pt385, Pt392), Thermistors (2.2k, 3k, 5k, 10k, 30k)

Digitizer Specifications

Digitizer Resolution Range	10 to 23 bits

Noise Rejection & Isolation

AC Common Mode Rejection Ratio (CMRR)	>70 dB (DC to 60 Hz, 1 kΩ imbalance in LO lead)

Input Characteristics

Input Bias Current	<30 pA

Environmental & Safety

Pollution Degree	2
Maximum Operating Altitude	2000 m

Software & Control

Software Driver Support	NI-DMM

TECHNOLOGY

Solid-state FlexDMM

APPLICATIONS

Automated Test Equipment (ATE), high-precision measurement, R&D, and production testing

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