KEYSIGHT TECHNOLOGIES (AGILENT HP)

34970A

The Keysight (formerly Agilent / HP) 34970A is a highly versatile and widely used 3-slot data acquisition / data logger switch unit. It features a built-in 6½-digit (22-bit) digital multimeter, providing precision measurements for up to 11 distinct functions, including temperature, DC/AC voltage, resistance, frequency, and current. With a capacity to scan up to 250 channels per second and support for eight interchangeable plug-in modules, the 34970A is easily configurable for varied applications ranging from simple benchtop data logging to complex automated test systems. Its non-volatile memory can store up to 50,000 readings, ensuring data is retained even when power is removed.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488), RS-232
Display	Alphanumeric VFD (Vacuum Fluorescent Display)
Programming Language	SCPI
Instrument State Storage	Up to 5 instrument states
Calibration	Closed-case electronic calibration

Physical

Power Supply	100 / 120 / 220 / 240 V AC ±10%, 45 Hz to 66 Hz or 360 Hz to 440 Hz
Operating Temperature	0 to 55 °C
Dimensions (W×H×D)	212.8 × 88.3 × 348.3 (without bumpers) / 254.4 × 104.2 × 374.0 (with bumpers) mm
Weight	3.6 kg

System Overview

Base DMM Resolution	6 1/2 digits (22-bit)
Module Slots	3
Maximum Scanning Speed	250 channels / second
Maximum Channel Capacity	120 channels (with three 40-channel modules)
Internal Reading Memory	50,000 readings (non-volatile)
Built-in Measurement Functions	11 functions (AC/DC Volts, AC/DC Current, 2-wire/4-wire Resistance, Frequency, Period, Thermocouple, RTD, Thermistor)

DC Measurement Characteristics

DC Voltage Ranges	100 mV, 1 V, 10 V, 100 V, 300 V
DC Voltage Maximum Input	300 V
DC Current Ranges	10 mA, 100 mA, 1 A
Resistance Ranges	100 Ω, 1 kΩ, 10 kΩ, 100 kΩ, 1 MΩ, 10 MΩ, 100 MΩ

AC Measurement Characteristics

AC Voltage Ranges	100 mV, 1 V, 10 V, 100 V, 300 V
AC Voltage Bandwidth	3 Hz to 300 kHz
AC Current Ranges	10 mA, 100 mA, 1 A

Temperature Measurement Characteristics

Thermocouple Types	B, E, J, K, N, R, S, T
RTD Types	100 Ω Platinum
Thermistor Types	2.252 kΩ, 5 kΩ, 10 kΩ

Frequency and Period Characteristics

Frequency Measurement Range	3 Hz to 300 kHz

Scanning and Triggering

Alarm Outputs	4 TTL alarm outputs
Alarm Limits per Channel	Hi / Lo alarm limits on each channel

Plug-In Module Capabilities

Plug-in Modules Available	8 Optional Plug-in Modules
Module 34901A	20-Channel Armature Multiplexer + 2 Current Channels (built-in thermocouple reference)
Module 34902A	16-Channel Reed Multiplexer
Module 34903A	20-Channel Actuator / General Purpose Switch
Module 34904A	4 x 8 Matrix Switch
Module 34905A	Dual 4-Channel RF Multiplexer (50 Ω)
Module 34906A	Dual 4-Channel RF Multiplexer (75 Ω)
Module 34907A	Multifunction Module (Digital I/O, DAC, Totalizer)
Module 34908A	40-Channel Single-Ended Multiplexer

Interfaces and Connectivity

Included Software	Agilent / Keysight BenchLink Data Logger

General Specifications

Warm-up Time	1 hour

Power

Power Consumption	12 W (25 VA peak)
Power Line Frequency	45 Hz to 66 Hz and 360 Hz to 440 Hz (automatically sensed)

Performance

Maximum Common Mode Voltage	300 V DC or AC rms (to earth ground)
Common Mode Rejection Ratio (CMRR)	140 dB (DC, 1 kΩ unbalance)
Normal Mode Rejection Ratio (NMRR)	60 dB (at 50/60 Hz)

Environmental

Storage Temperature	-40 °C to +70 °C
Operating Humidity	Up to 80% RH at 40 °C

Compliance

Safety Compliance	CSA, UL-1244, IEC 1010-1

Measurement & Math

Scaling Function	Mx + B
Real-Time Clock	Battery-backed (used for timestamping)

Triggering

Trigger Sources	Interval Timer, External, Bus, Front Panel

TECHNOLOGY

Data Acquisition

APPLICATIONS

Data Logging, Automated Test Equipment (ATE), Industrial Monitoring