



SIM970 Quad Digital Voltmeter

- True 5½-digit performance
- Four isolated channels
- Bright 7-segment LED displays
- Three decade autoranging to ± 19.9999 V
- 10 M Ω input impedance
- External trigger for data synchronization
- Unique continuous autocalibration
- 90 dB power line frequency rejection



The SIM970 Quad Digital Voltmeter is designed to make precision low-frequency voltage measurements with excellent long-term accuracy. A single SIM970 module delivers big DVM performance at a very economical cost per channel.

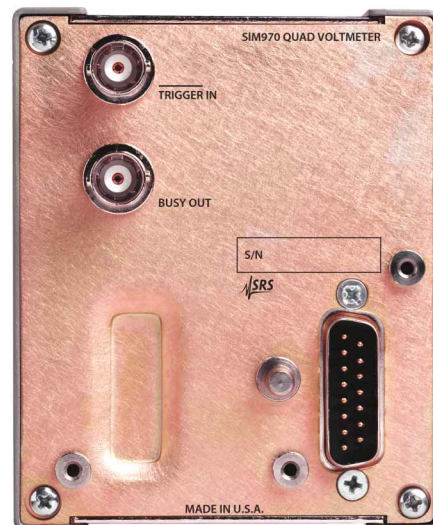
For applications in which many voltages must be monitored, up to 16 DVM channels can be put into one SIM900 mainframe. Four voltage ranges from ± 199.999 mV to ± 19.9999 V can be autoranged or manually selected. An external trigger input allows synchronization of voltage readings on all four channels for critical applications requiring coincidental readings. A BUSY output gives a TTL HIGH when readings are being taken.

Autocalibration is performed with every reading by sequentially measuring not only the input voltage, but also the ground and the full-scale voltages against a calibrated internal reference. This autocalibration routine virtually eliminates offsets and scale errors, and ensures smooth range-to-range transitions.

The bright front panel LED display shows updated readings three times per second. Computer access

through the SIM900 mainframe (RS-232 or GPIB) permits data logging with 24 bits of resolution. The SIM970 uses isolated BNC connectors for inputs so coaxial cables can be used for reduced noise pickup.

The SIM970 is part of a wide range of modules available for the SIM (Small Instrumentation Modules) platform from Stanford Research Systems. For more information, please contact SRS at 408-744-9040 or visit our web site at www.thinkSRS.com.



SIM970 Specifications

Number of channels 4
 Number of digits 5 ½ (± 199999 counts) [1]

Full scale DC voltage ranges

Range	Voltage	Resolution	Noise, counts rms [2]
1	± 19.9999 V	100 μ V	1.0
2	± 1.99999 V	10 μ V	0.3
3	± 999.99 mV	10 μ V	0.3
4	± 199.999 mV	1 μ V	1.0

Measurement accuracy, \pm (% of reading + counts) [3]

Range	24 hour, (23 \pm 1) °C	90 day, (23 \pm 5) °C (typ)	1 year, (23 \pm 5) °C (typ)
1 [4]	0.0004 + 1	0.0050 + 1	0.0080 + 1
2	0.0004 + 2	0.0050 + 2	0.0080 + 2
3	0.0004 + 2	0.0050 + 2	0.0080 + 2
4	0.0004 + 4	0.0050 + 6	0.0080 + 6

Transfer accuracy (24 hour counts error)/2 [3][5] (typical)
 Input resistance 10 M Ω \pm 1 %, >3 G Ω selectable on ranges 2 to 4 [6]
 Input terminals BNC (Amphenol 31-10 or similar)
 Input protection \pm 60 V center to shield, \pm 200 V shield to earth
 Triggering Internal, external (TTL), or remote
 BUSY output TTL HIGH when busy
 Reading update rate for power line frequency [7] 3.6/s (60 Hz), 3.0/s (50 Hz)
 Normal mode rejection at power line frequency 90 dB (59 Hz to 61 Hz or 49 Hz to 51 Hz)
 Common mode rejection at DC 125 dB (for 1 k Ω unbalance in the shield)
 Settling time 1 s to within 3 counts of final reading on ranges 1 to 3, 8 s on range 4
 Display Red LED, 0.40", with polarity indication
 Green LED, range and autorange indication
 Operating temperature 0 °C to 40 °C, non-condensing
 Interface Serial via SIM interface
 Connectors BNC (4 front, 2 rear)
 DB15 (M) SIM Interface
 Power +5 V (480 mA)
 Dimensions 3.0" W \times 3.6" H \times 7.0" D
 Weight 2.3 lbs
 Warranty One year parts & labor against defects in workmanship and materials

NOTES

- [1] One count is a unit change in the least-significant digit.
7 ½ digits of resolution available through the remote interface
- [2] Measured over 360 consecutive readings
- [3] Inside SIM900 mainframe following a two hour warmup, autozero ON
- [4] Scale calibration ON
- [5] Within 10 minutes and ± 0.5 °C, within ± 10 % of the initial value, fixed range, input between 10 % and 100 % of full scale
- [6] Input bias current is <1 pA at 23 °C
- [7] Internal triggering, autozero ON. Rate is double for autozero OFF

