22. Digital Multimeters - precision measurement

Measurably better value

1604 DMM

- 4¾ digit bench-top multimeter
- 0.08% basic Vds accuracy
- True RMS ac functions
- Isolated RS-232 interface

The 1604 is a high quality 40,000 count bench-top multimeter with a wide range of features.

It offers automatic or manual ranging, high resolution (10µV, 10mΩ) together with current measurement up to 10A.

Function	Ranges	Best Resolution	Best Accuracy
DC V	(5) 400mV - 1000V	10µV	0.08% ± 4 digits
AC V	(5) 400mV - 750V	100µV	0.5% ± 4 digits
Resistance	(6) 400Ω - 40MΩ	10mΩ	0.1% ± 4 digits
DC I	(3) 4mA - 10A	0.1µA	0.1% ± 4 digits
AC I	(3) 4mA - 10A	1µA	0.5% ± 4 digits
Frequency	(2) 4kHz to 40kHz	0.1Hz	0.01% ± 1 digit

Further measurement functions: Continuity. Diode Test.
Smart functions: Null (Relative), Hold, T-Hold, Min/Max.
Interface: opto-isolated bi-directional RS-232 interface. 9600 baud.
Power: 230V or 115V AC nominal 50/60Hz, adjustable internally.
Size & weight: 260 x 88 x 235 mm (WxHxD). 2.0 kg (4.4 lb)

- 40,000 counts, auto or manual ranging
- Accuracy and resolution, 0.08%, 10µV, 10mΩ
- Large and bright LED display (14mm/0.56")
- True rms ac functions, wide ac bandwidth
- Relative, T-Hold and Min-Max functions included
- Optional PC control and logging software

1908/1908P DMM

- Precision 5½ digit multimeter
- Dual display, dual measurement
- 0.02% basic Vdc accuracy
- AC line or battery operation
- USB, RS232, GPIB, LAN interfaces

The 1908 is a precision 5½ digit bench multimeter incorporating dual displays and dual measurement technology.

The dual displays can be used either to display one measurement in two units (e.g. mV and dB) or to measure two parameters simultaneously (e.g. dc-V and ac-V).

Function	Ranges	Best Resolution	Best Accuracy
DC V	(5) 100mV - 1000V	1µV	0.02% ± 3 digits
AC V	(5) 100mV - 750V	1µV	0.2% ± 100 digits
Resistance	(6) 100Ω - 10MΩ	1mΩ	0.03% ± 2 digits
DC I	(3) 10mA - 10A	0.1µA	0.05% ± 5 digits
AC I	(3) 10mA - 10A	0.1µA	0.35% ± 20 digits

Further measurement functions: Frequency, Capacitance, Temperature, Continuity, Diode Test. Smart functions: Null (Relative), Hold, T-Hold, Min/Max, dB, Ax+B, % deviation, VA.
Logger: 500 readings. Interfaces: USB (both models). GPIB, RS232, LAN (1908P).
Power: 230V or 115V AC 50/60Hz, or built-in NiMh rechargeable cells.
Size & weight: 250 x 87 x 269 mm (WxHxD). 3.2 kg (7 lb)

- Dual 120,000 count LCD, auto/manual ranging
- Accuracy and resolution: 0.02%, 10µV, 1mΩ
- Dual displays & 'dual measurement' technology
- Frequency, Capacitance and Temperature
- Wide range of computing functions e.g. Ax + B
- 500 reading data logger
- Mains and rechargeable battery operation
- 2U half-rack sizing with protective buffers
- USB interface on both models
- GPIB, RS232 & LXI compliant LAN interfaces (1908P)

ETHERNET LAN LXI USB UNIVERSAL SERIAL BUS RS-232 RS-423 GPIB IEEE-488

See previous page for DMM feature comparison table.

24. Component Measurement - precision measurement

Measurably better value

LCR400 LCR Bridge

- 0.1% basic accuracy
- Built-in component fixture
- Built-in limits comparator
- RS-232 interface

Note: Full technical details are available on the website.

- 0.1% basic measurement accuracy
- Three test frequencies of 100Hz, 1kHz and 10kHz
- Automatic component recognition
- Built-in 4 terminal component fixture
- Dual 5 digit high brightness displays
- Limits comparator with multiple pass and fail bins
- RS-232 interface for PC connectivity
- Optional SMD tweezers, Kelvin Clip leads, Windows logging software

Note: accessories not to same scale as LCR400

The LCR400 is a high performance LCR meter that offers an alternative to low-cost handheld units or expensive system units.

Dual displays, automatic component recognition and auto-ranging make it easy to use, while its built-in test fixture and limits comparator make it suitable for applications within the laboratory, production or inspection areas.

Range and resolution limits:

Resistance: 0.1mΩ to 990MΩ
Inductance: 0.001µH to 9900H
Capacitance: 0.001pF to 99000µF

BS407 Low Ohmmeter

- 0.1% basic accuracy
- 1µΩ to 20kΩ range
- Kelvin clip connection leads
- Rechargeable battery operation

Note: Full technical details are available on the website.

- High basic accuracy of 0.1%
- Wide measurement range of 1µΩ to 20kΩ
- Current reversal switch for detecting thermal emf
- Current diversion switch for easy zero setting
- Four terminal measurement using Kelvin clip leads
- Battery operation with built-in charger
- Switchable 20mV clamp for 'dry circuit' testing

The BS407 is fully optimised for the task of accurate measurement of low resistances with a best resolution of 1µΩ.

It uses a Direct Current technique to measure true resistance, rather than the resistive component of impedance which is shown by AC excited LCR bridges. The test current for each range has been chosen to minimise heating of the sample under test while being sufficient to minimise the effects of thermal emf and noise.

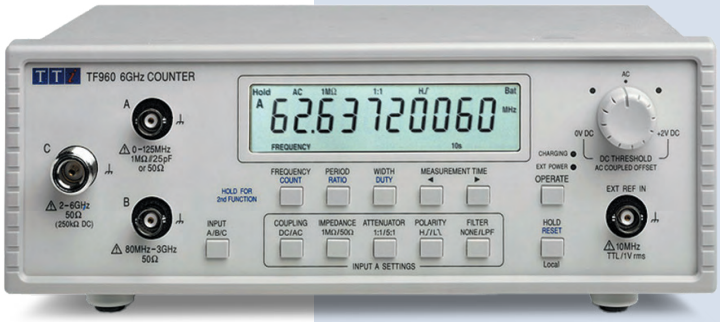
This gives much greater accuracy at low resistances than can be obtained from the very low test currents used by general purpose high resolution multimeters.

TF930 & TF960

- DC to 3GHz/6GHz frequency range
- Frequency, period, pulse width, ratio and event counter modes
- Rechargeable batteries
- USB interface included

- 0.001Hz to 3000MHz or 6000MHz frequency range
- TCXO timebase with better than 1ppm stability
- Frequency, period, pulse width and totalise modes
- Reciprocal counting measurements
- High impedance measurement up to 125 MHz
- Low pass filter, attenuator and trigger level control
- AC or DC coupling, 1M/50Ω selection, polarity invert
- Large 10 digit LCD display with annunciators
- Operation from built-in rechargeable batteries
- Low power consumption
- Remote control and readback via USB

Note: Full technical details are available on the website.



The TF930 and TF960 are a high quality bench/portable universal frequency counters which offers period measurement, frequency ratio, pulse width and event counting.

They use an advanced reciprocal frequency counting technique to achieve high resolution at all frequencies. A dc coupled input enables VLF measurements to be made (down to 1mHz). The timebase uses a high quality TCXO crystal with a very low ageing rate. An external reference can also be used.

The large 10 digit LCD has a full set of annunciators. Measurement times can be set between 0.3 seconds and 100 seconds.

Pulse width measurements can be made from rising to falling or falling to rising edge with adjustable thresholds. A variable attenuator is incorporated the input impedance is switchable between 1MΩ and 50Ω.

The instruments operate from internal rechargeable NiMH batteries which give typically 24 hours operating life. The universal AC charger supplied will recharge the batteries in less than 4 hours and can be used for continuous AC operation.

Full remote control and read-back is provided via a USB interface.

The TF960 is an extended version of the TF930 with an additional N connector input covering <2GHz up to >6GHz.

PFM3000

- 3Hz to 3GHz frequency range
- Frequency or period display
- Continuous reciprocal measurement
- Handheld format
- Long battery life

- 3Hz to 3000MHz frequency range
- Frequency and period measurement
- High sensitivity at all frequencies
- Switchable low pass filter
- Continuous reciprocal counting measurement
- 0.001mHz low frequency resolution
- Push-to-measure function with auto power-down
- Large 8.5 digit display with full range of annunciators

Note: Full technical details are available on the website.

The PFM3000 is the latest handheld frequency counter from Aim-TTi offering measurement up to 3GHz.

It provides high impedance measurement up to 125MHz and 50Ω measurement up to 3000MHz, with excellent sensitivity across all frequencies.

It can measure both frequency and period and uses a continuous reciprocal frequency counting technique which gives high resolution and accuracy at all frequencies.

Despite its wide frequency range the PFM3000 has a low power consumption enabling it to operate for many hours from a disposable battery.

A push-to-measure capability is provided to extend battery life when continuous signal monitoring is not required.

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