

Test Equipment Solutions Datasheet

Test Equipment Solutions Ltd specialise in the second user sale, rental and distribution of quality test & measurement (T&M) equipment. We stock all major equipment types such as spectrum analyzers, signal generators, oscilloscopes, power meters, logic analysers etc from all the major suppliers such as Agilent, Tektronix, Anritsu and Rohde & Schwarz.

We are focused at the professional end of the marketplace, primarily working with customers for whom high performance, quality and service are key, whilst realising the cost savings that second user equipment offers. As such, we fully test & refurbish equipment in our in-house, traceable Lab. Items are supplied with manuals, accessories and typically a full no-quibble 2 year warranty. Our staff have extensive backgrounds in T&M, totalling over 150 years of combined experience, which enables us to deliver industry-leading service and support. We endeavour to be customer focused in every way right down to the detail, such as offering free delivery on sales, covering the cost of warranty returns BOTH ways (plus supplying a loan unit, if available) and supplying a free business tool with every order.

As well as the headline benefit of cost saving, second user offers shorter lead times, higher reliability and multivendor solutions. Rental, of course, is ideal for shorter term needs and offers fast delivery, flexibility, try-before-you-buy, zero capital expenditure, lower risk and off balance sheet accounting. Both second user and rental improve the key business measure of Return On Capital Employed.

We are based near Heathrow Airport in the UK from where we supply test equipment worldwide. Our facility incorporates Sales, Support, Admin, Logistics and our own in-house Lab.

All products supplied by Test Equipment Solutions include:

- No-quibble parts & labour warranty (we provide transport for UK mainland addresses).
- Free loan equipment during warranty repair, if available.
- Full electrical, mechanical and safety refurbishment in our in-house Lab.
- Certificate of Conformance (calibration available on request).
- Manuals and accessories required for normal operation.
- Free insured delivery to your UK mainland address (sales).
- Support from our team of seasoned Test & Measurement engineers.
- ISO9001 quality assurance.

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515A



515A Portable Calibrator

- Precision, portable, 4-1/2 digit calibration and 5-1/2 digit verification where you need it
- Battery powered when disconnected from line power
- Lightweight and small size

The Model 515A Portable Calibrator is a precision voltage and resistance calibration source for on-site calibration of measuring instruments. The 515A provides direct and alternating voltage and resistance standards in a unit only 3-1/2 inches high by 8-1/2 inches wide by 16 inches deep. The instrument weighs just 13 pounds, including the rechargeable battery pack, which eliminates warm-up delays after transit and allows 8-hour operation free of line power for true portability. The 515A's basic uncertainty is specified over a temperature range of 18°C to 28°C for a 1-year period, thus making it easy to use in production test and calibration environments without complex correction terms. The long calibration cycle also makes the 515A economical to own by minimizing maintenance overhead costs.

All 515A outputs are available at a single set of output terminals. In addition, terminals are available to allow guarding and shielding of test leads in critical test situations.

If the unit is connected to the ac line, the internal battery is placed on charge; otherwise the 515A automatically operates from the battery and its state of charge is indicated on the meter to the right of the panel.

The 515A can be used effectively to test a wide range of characteristics in measuring instruments.

Here are a few of the many applications:
dV: Input offset current, a/d linearity, absolute accuracy
aV: Frequency response, converter linearity, residual noise, absolute accuracy
Resistance: Linearity, residual resistance, absolute accuracy
General: Zero offset and stability, autoranging, overranging

Specifications

Technical Specifications

Direct Voltage Ranges

- μV : 0 to 99 μV continuous (0.2 μV resolution)
- 1V: 0 to 1.0V in 0.1V steps
- 10V: 0 to 10V in 1V steps
- 100V: 100V cardinal point

Accuracy: (For 1 year, 18°C to 28°C, 30 min warm-up)

- μV range: $\pm 2 \mu\text{V}$
- 1V, 10V, and 100V ranges: ± 30 ppm or 30 μV of range, whichever is greater

Output Current: Function of source resistance, except 100V range which is limited at approximately 0.5 mA. No damage to instrument with short circuit on output.

Source Resistance

- μV , 1V, 10V ranges: 300 Ω
- 100V range: <1 Ω (up to 0.5 mA load)

Alternating Voltage

Range: 1V, 10V, 100V cardinal points

Output Frequencies

- 10V: 400 Hz, 4 kHz, 50 kHz
- 1V, 100V: 400 Hz

Accuracy: (For 1 year, 18°C to 28°C, 30 min warm-up)

- 1V: $\pm 0.05\%$
- 10V: $\pm 0.04\%$ at 400 Hz and 4 kHz. $\pm 0.1\%$ at 50 kHz
- 100V: $\pm 0.06\%$

Frequency Accuracy: $\pm 1\%$ except at 50 kHz $\pm 5\%$

Total Harmonic Distortion and Noise: <0.03% (400 Hz and 4 kHz), <0.05% (50 kHz)

Output Current

- 1V, 10V output: 0 to 10 mA rms
- 100V output: 0 to 0.5 mA rms

Resistance

Range: 10 Ω through 10 M Ω in decade steps zero setting

Accuracy: (1 year, 18°C to 28°C, referred to "0" Ω position)

- 0 Ω - Residual resistance is less than 0.15 Ω
- 10 Ω - 100 Ω : $\pm 0.06\%$
- 1 k Ω - 1 M Ω : $\pm 0.015\%$
- 10 M Ω : $\pm 0.075\%$

Power Rating: 0.2W or 100V (dc or rms), whichever is less

General Specifications

Temperature: 0°C to 50°C, operating

Power: 100, 115, 200, 230V ac, $\pm 10\%$, 50 to 440 Hz, <10W, or internal batteries. Eight hour operation from batteries when fully charged

Weight: 5.9 kg (13 lb)

Size: 8.9 cm H x 21.6 cm W x 40.6 cm D (3.5 in H x 8.5 in W x 16 in D)

Included: Manual, power cord, batteries, serialized and dated calibration certificate

Ordering Information

Model

515A Calibrator

Accessories

M03-200-618 3" Rack Adapter, Dual

M03-200-619 3" Rack Adapter, Single, Offset

M03-200-620 Panel Mounting Kit

M03-203-700 Panel Protector