

## INTRODUCTION

- Best performance / price ratio
- High-speed sampling rate (50000 Rdgs/sec)
- Direct thermocouple measurement (Built-In cold junction compensation to improve accuracy)
- Dual measurement & dual display (Including Thermocouple Measurement)
- Capacitance Measurement
- Several measurements & mathematic functions
- Wide range current measurement (Up to 10A)
- DCV accuracy (0.012% in 1 year)
- High sensitivity (DCV : 0.1 $\mu$ V & Resistance : 100 $\mu$  $\Omega$ )
- Plug & Play interface : Built-in USB (USBTMC)
- High Storage Memory (Up to 2000 Readings)
- Free Application Software

*Note: The 1-year accuracy is subject to calibration accuracy.*



In addition, the meters provide wide ranges for general measurements:

1. **DCV** : 100mV, 1V, 10V, 100V & 1000V
2. **ACV** : 100mV, 1V to 750V
3. **DCI** : 10mA, 100mA, 1A, 3A & 10A (3A range not available in M-3511A)
4. **ACI** : 1A, 3A & 10A (3A range not available in M-3511A)
5. **2 & 4-wired resistance** : 100 $\Omega$ , 1k $\Omega$ , 10k $\Omega$ , 100k $\Omega$ , 1M $\Omega$ , 10M $\Omega$  & 100M $\Omega$
6. **Capacitance** : 1nF, 10nF, 100nF, 1 $\mu$ F, 10 $\mu$ F, 100 $\mu$ F, 1000 $\mu$ F & 10000 $\mu$ F
7. **Thermocouple Temperature (only in M- 3510A)** : -250 $^{\circ}$ C ~ 2316 $^{\circ}$ C
8. **RTD**: 2W & 4W
9. **Frequency & Period** : 100mV to 750V (From 3Hz to 300KHz)
10. **Diode** : 1V
11. **Continuity (for 2W)** : 1000 $\Omega$

**Some additional capabilities include:**

- Full Math Functions - Percent, Average, Null, Limits, MX+ B, dB & dBm.
- Resolution Adjustment -0.001, 0.006, 0.02, 0.06, 0.2, 0.6, 1, 2, 10 & 100 NPLC
- USB & GPI B (Optional) remote control interface.
- Through software ( PT - TOOL) for simulating the real operation on PC.
- Through Microsoft Office Word & Excel (PT - LINK) for remotely storing and recalling the measured values.

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**ACCESSORIES**

- Dimensions & Weight: 88.8 [H] x 214.6 [W] x 280.7 [D] mm, approx. 2.23 Kgs
- Power Line Cord
- USB cable
- Standard Test Leads
- Calibration Certificate
- Software (download from online link)



**Test Lead Ratings :**  
IEC 61010-031 CAT III  
Operating Voltage : 1000V DC  
Current : 10A  
UL / CE Rated

**TECHNICAL SPECIFICATIONS**

| DC CHARACTERISTICS  |                     |                 |                              |
|---|---------------------|-----------------|------------------------------|
| Function  | Range               | Resolution      | 1 year Accuracy <sup>2</sup> |
| DVC   | 100.0000 mV         | 0.1 $\mu$ V     | 0.0080 + 0.0045              |
|   | 1.000000 V          | 1.0 $\mu$ V     | 0.0090 + 0.0010              |
|   | 10.00000 V          | 10 $\mu$ V      | 0.0120 + 0.0020              |
|   | 100.0000 V          | 100 $\mu$ V     | 0.0120 + 0.0020              |
|   | 1000.000 V          | 1 mV            | 0.0200 + 0.0030              |
| DCI   | 10.00000 mA         | 10 nA           | 0.050 + 0.020                |
|   | 100.0000 mA         | 100 nA          | 0.050 + 0.010                |
|   | 1.000000 A          | 1 $\mu$ A       | 0.150 + 0.020                |
|   | 3.00000 A           | 10 $\mu$ A      | 0.200 + 0.030                |
|   | 10.00000 A          | 10 $\mu$ A      | 0.0250 + 0.050               |
| 2W $\Omega^3$ / 4W $\Omega$   | 100.0000 $\Omega$   | 100 $\mu\Omega$ | 0.020 + 0.005                |
|   | 1.000000 K $\Omega$ | 1 m $\Omega$    | 0.020 + 0.002                |
|   | 10.00000 K $\Omega$ | 10 m $\Omega$   | 0.020 + 0.002                |
| 1. The specification are under 2 hour warm-up condition with the setting 10 PLC, and they're relative to the calibrator specifications in PICO TEST<br>2. (% of reading + % of range). (23°C 5°C)<br>3. The Null function must be used when the 2W $\Omega$ is selected |                     |                 |                              |
|   | 100.0000 K $\Omega$ | 100 m $\Omega$  | 0.020 + 0.002                |
|   | 1.000000 M $\Omega$ | 1 $\Omega$      | 0.020 + 0.004                |
|   | 10.00000M $\Omega$  | 10 $\Omega$     | 0.100 + 0.004                |
|   | 100.0000 M $\Omega$ | 100 $\Omega$    | 1.500 + 0.005                |
| DIODE   | 1.00000 V           | 10 $\mu$ V      | 0.020 + 0.020                |
| CONTINUITY (for 2W $\Omega$ )   | 1000.00 $\Omega$    | 10 m $\Omega$   | 0.020 + 0.030                |

| FREQUENCY & PERIOD |                            |           |                 |
|--------------------|----------------------------|-----------|-----------------|
| Function           | Range                      | Frequency | 1 year Accuracy |
| FREQUENCY & PERIOD | 100mV to 750V <sup>4</sup> | 10-40     | 0.03            |
|                    |                            | 40-300K   | 0.02            |

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**TECHNICAL SPECIFICATIONS**

| DC CHARACTERISTICS      |                          |               |             |                              |
|-------------------------|--------------------------|---------------|-------------|------------------------------|
| Function                | Range                    | Resolution    | Frequency   | 1 year Accuracy <sup>2</sup> |
| ACV (TRMS)              | 100.0000 mV              | 0.1 μV        | 10 - 20K    | 0.1200 + 0.050               |
|                         |                          |               | 20K - 50K   | 0.2500 + 0.050               |
|                         |                          |               | 50K - 100K  | 0.6500 + 0.80                |
|                         |                          |               | 100K - 300K | 4.8000 + 0.800               |
|                         | 1.000000 V to 750.0000 V | 1.0 μV to 1mA | 10 - 20K    | 0.1200 + 0.040               |
|                         |                          |               | 20K - 50K   | 0.2500 + 0.050               |
| ACI <sup>6</sup> (TRMS) | 1.000000 A               | 1 μA          | 10 - 1K     | 0.200 + 0.040                |
|                         |                          |               | 1K - 5K     | 1.00 + 0.100                 |
|                         |                          |               | 10 - 1K     | 0.300 + 0.060                |
|                         |                          |               | 1K - 5K     | 1.500 + 0.150                |
|                         | 3.00000 A                | 10 μA         | 10 - 1K     | 0.500 + 0.120                |
|                         |                          |               | 1K - 5K     | 2.50 + 0.20                  |
|                         | 10.00000 A               | 10 μA         | 10 - 1K     | 0.500 + 0.120                |
|                         |                          |               | 1K - 5K     | 2.50 + 0.20                  |

4. The Range 750V is limited to 100KHz  
 5. Bandwidth : 3Hz. Specifications are for sine wave input > 5% of range. For <50 KHz and inputs within 1% ~ 5% of range, and 03% of range additional error. For 50KHz ~ add 035% of range.  
 6. For 10A range, > DC 10A or AC 10Arms 30 seconds ON and 30 seconds OFF

| CAPACITANCE CHARACTERISTICS |          |              |                 |
|-----------------------------|----------|--------------|-----------------|
| Function                    | Range    | Test Current | 1 year Accuracy |
| CAPACITANCE <sup>7</sup>    | 1 nF     | 10 μA        | 2.0 + 0.80      |
|                             | 10 nF    | 10 μA        | 1.0 + 0.50      |
|                             | 100 nF   | 100 μA       | 1.0 + 0.50      |
|                             | 1 μV     | 100 μA       | 1.0 + 0.50      |
|                             | 10 μV    | 100 μA       | 1.0 + 0.50      |
|                             | 100 μV   | 1 mA         | 1.0 + 0.50      |
|                             | 1000 μV  | 1 mA         | 1.0 + 0.50      |
|                             | 10000 μV | 1 mA         | 2.0 + 0.50      |

| TEMPERATURE CHARACTERISTICS |       |                 |                 |
|-----------------------------|-------|-----------------|-----------------|
| Function                    | Range | Test Current    | 1 year Accuracy |
| TEMPERATURE                 | B     | 600°C ~ 1820°C  | 1.5°C           |
|                             | C     | 0°C ~ 2316°C    | 1.5°C           |
|                             | E     | -250°C ~ 1000°C | 1.5°C           |
|                             | J     | -210°C ~ 1200°C | 1.5°C           |
|                             | K     | -200°C ~ 1372°C | 1.5°C           |
|                             | N     | -200°C ~ 1300°C | 1.5°C           |
|                             | R     | 0°C ~ 1767°C    | 1.5°C           |
|                             | S     | 0°C ~ 1767°C    | 1.5°C           |
|                             | T     | 250°C ~ 400°C   | 1.5°C           |

**GENERAL SPECIFICATIONS**

| Particulars                          | Specifications  |
|--------------------------------------|---|
| Power Supply                         | 100V / 120V / 220V (230V) / 240V  |
| Power Line Frequency                 | 50/60 Hz  |
| Power Consumption                    | 25 VA Maximum   |
| Operating Temperature                | 0°C to 50°C   |
| Operating Humidity                   | Maximum relative humidity 80% for temperature up to 35°C.   |
| Storage Temperature                  | - 40°C to 70°C  |
| Operating Altitude                   | Up to 2000 M  |
| Bench Dimension for Rack (W x H x D) | 214.6 x 88.6 x 280.7 mm   |
| Weight                               | 2230g   |
| Safety                               | EN61010-1:2010 (3rd Edition)<br>EN61010-2-030:2010 (1st Edition)<br>Installation CAT II,<br>Measurement CAT II 600V |
| EMC                                  | Pollution Degree 2<br>EN61326-1:2006, EN61326-2-1:2006  |
| VIBRATION                            | MIL- 28800F, 3.8.4.2 VI<br>VIBRATION, SINUSOIDAL CLASS 1,2  |
| SHOCK                                | MIL- PRF-28800F, 4.5.5.4<br>MECHANICAL  |
| Warranty                             | 1 year against manufacturing defects  |



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