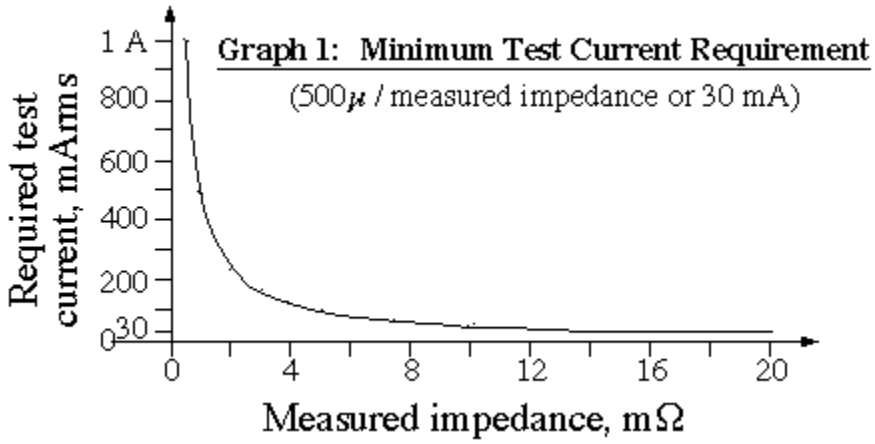
Hypatia Models 308 and 309 Complete Specifications, Version 1.33

Performance has been substantially improved in hardware version 4 instruments. Tighter new specifications will be published later.

Electrical:

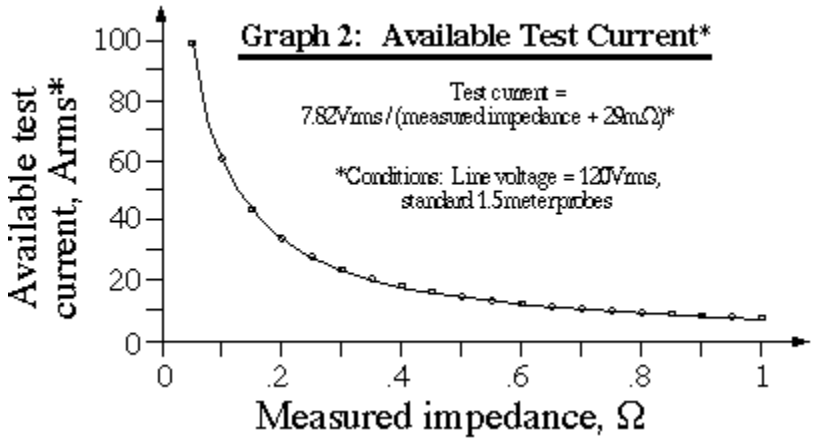
Impedance Measurement:

Accuracy: ± 1% of reading (when the test current is > 500µ / impedance in Ohms and > 30 mA) (Notes 1 & 2, Graph 1)
Range: 0 to 100 Ohms
Measurement Technique: Successive approximation analog to digital conversion of sensed voltage and current. Measurement window: Either 2 or 3 full sine waves depending upon line frequency (e.g. 3 at 60 Hz, 2 at 50 Hz). Sample rate: ~ 53 KHz, yielding ~ 2.6K voltage and 2.6K current samples per measurement window at 60 Hz, and ~ 2.1K voltage and 2.1K current samples/window at 50 Hz. Mathematical conversion to true rms voltage and current values, division independent of phase to yield impedance. Display derived from four layer stack averaging. Voltage is sensed at the probe heads by internal probe sense lines or, for Model 109 probes, by precision Kelvin sensing.



Digital Current Measurement:

Accuracy: ± 1% of reading ± 4 mA
Range: 0 to 144 Amps rms (Note 3, Graph 2)
Measurement Technique: Conversion of internal precision shunt resistor voltage as above.



Bar Graph Current Measurement:

Accuracy: ± 1% of reading ± 4 mA at transition points (every 2.5 Arms)
Range: 2.5 to 77.5 Amps rms (0 to 2.5 Arms implied) (Note 3, Graph 2)
Measurement Technique: Logical translation of digital current measurement.

Digital Timer:

Accuracy: ± .1% (Digital Timer and Audio / Visual Alerts applicable to Model 309 or, if server driven, Model 308)
Range: 1 second to 59 minutes, 59 seconds (extended times possible under server software)
Internal Reference: 16.777 MHz (2e24) crystal controlled system clock.

Audio / Visual Alerts:

When enabled, sounds and flashes when any user specified test current or impedance limit is violated.
Accuracy: Logically detected. The accuracy therefore exactly matches the accuracy of associated measurements.

Operating Duty Cycle:

Continuous to test currents of 35 Amps
Derate linearly to 50% duty cycle at 60 Amps
Maximum Cycle Period: 35 to 60 Amps: 4 Minutes

Maximum allowed common mode voltage to ground: 50 Vrms, 71 Vpeak or dc

Maximum normal mode open circuit probe source voltage (at 132 Vrms line voltage): 8.6 Vrms, 12.1 Vpeak

Input Power Requirements:

90 to 132 Volts rms
48 to 66 Hertz sine wave
Maximum Power: 396 Watts (3.0 Arms at 132 Vrms)

Check Resistor:

Resistance: 100 milliohms ± 1%
Maximum continuous current: 17.5 Amps

Verification Schedule:

There are no hardware calibration adjustments, and thus no hardware calibration is required or possible. Software calibration data is available, but it's normally unnecessary to modify this data. Complete the formal performance verification procedure annually or following any repair service.

Safety Certification: Designed and manufactured to meet or exceed UL 3111. Instruments manufactured before 1 January 2008 were so listed by ETL.

Environmental:

Operating Temperature Range: 5 to 40°C
Relative Humidity Range: 0 to 90% non-condensing

Physical:

Mass: 7.7 kilograms (Weight: 17 pounds) {Including two probes}

Overall Dimensions:

Height: 10.92 centimeters (4.30 inches)
Width: 21.15 centimeters (8.33 inches)
Depth: 26.0centimeters (10.24 inches)

Probe Length, Each Side:

Standard: 1.5 Meters (4.9 feet)
Maximum: 51.0 Meters (167.2 feet) at 50 Amps, 85.0 Meters (278.7 feet) at 40 Amps

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Note 1: Impedance accuracy is specified only when the test current is > 500µ divided by impedance in Ohms and > 30 mA.

Note 2: Figures exclude contact impedance which adds approximately 1 milliohm with sound double alligator clip type probe connections, and approximately 2 milliohm with one alligator clip and one power connector type probe connections. If the Model 109 Kelvin sense probes are utilized, contact impedance is eliminated.

Note 3: The measurement circuits are broad ranged, but the instrument should not be operated beyond the maximum current limit of 60 Amps or the specified duty cycle limits due to thermal limitations of certain power components.

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