

Model 199 System DMM/Scanner Addendum

INTRODUCTION

This addendum to the Model 199 Instruction Manual is being provided in order to supply you with the latest information in the least possible time. Please read over this information before using the Model 199.

SECTION 4

Performance Verification

4.1 INTRODUCTION

The procedures outlined in this section may be used to verify that the instrument is operating within the limits stated in the specifications at the front of this manual. Performance verification may be performed when the instrument is first received to ensure that no damage or misadjustment has occurred during shipment. Verification may also be performed whenever there is a question of instrument accuracy, or following calibration, if desired.

NOTE

If the instrument is still under warranty (less than 1 year from the date of shipment), and its performance falls outside the specified range, contact your Keithley representative or the factory to determine the correct course of action.

4.2 ENVIRONMENTAL CONDITIONS

All measurements should be made at 18 - 28°C (65 - 82°F) and at less than 80% relative humidity.

4.3 INITIAL CONDITIONS

The Model 199 must be turned on and allowed to warm up for at least two hours before beginning the verification procedures. If the instrument has been subject to extremes of temperature (outside the range specified in paragraph 4.2), additional time should be allowed for internal temperatures to reach normal operating temperature. Typically, it takes one additional hour to stabilize a unit that is 10°C (18°F) outside the specified temperature range.

4.4 RECOMMENDED TEST EQUIPMENT

Table 4-1 lists all test equipment required for verification. Alternate equipment may be used as long as the substitute equipment has specifications at least as good as those listed in the table.

NOTE

The verification limits in this section do not include test equipment tolerance and are based on one year accuracy specifications.

Table 4-1. Recommended Test Equipment

Mfg	Model	Description	Specifications
Fluke	5440A	DC Voltage Calibrator	300mV, 3V, 30V, 300V ranges ± 15 ppm.
Fluke	5200A	AC Voltage Calibrator	300mV, 3V, 30V ranges; 20Hz $\pm 0.1\%$; 50Hz-20kHz 0.02%; 100kHz $\pm 0.33\%$.
Fluke	5215A	AC Power Amplifier	300V range: 20Hz $\pm 0.12\%$; 50Hz-20kHz $\pm 0.04\%$; 100kHz $\pm 0.1\%$
Fluke	5450A	Resistance Calibrator	300 Ω -3M Ω ranges ± 15 ppm; 30M Ω ± 32 ppm; 300M Ω range ± 225 ppm
Valhalla	2500E	AC-DC Current Calibrator	30mA, 3A ranges $\pm 0.03\%$ DC, $\pm 0.1\%$ AC to 5kHz (at full scale output)

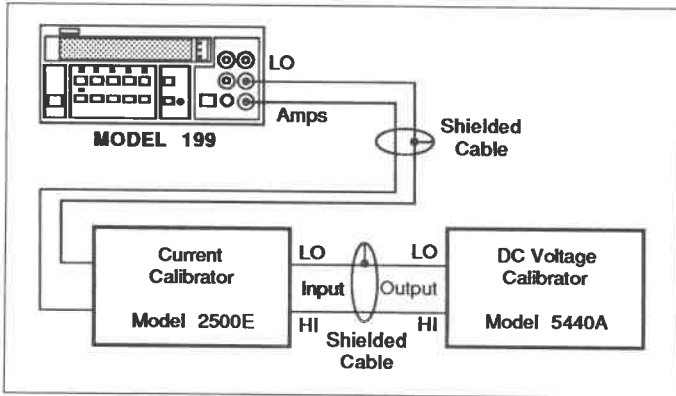


Figure 4-5. Connections for DC Current Verification

4.5.5 TRMS AC Current Verification

With the instrument set for 5½d resolution, verify the AC current function as follows:

CAUTION

Do not exceed 3A to the AMPS and LO input terminals or the front panel current fuse will blow.

1. Select the ACA function and autorange. Do not use zero to cancel any offset in this procedure.
2. Connect the AC current calibration source to the Model 199 as shown in Figure 4-6.
3. Set the calibration source to output 30mA at a frequency of 20Hz and verify that the reading is within the limits listed in Table 4-6.
4. Repeat the 30mA measurement at the other frequencies specified in Table 4-6.
5. Repeat the procedure for the 3A range by applying the AC current level listed in Table 4-6. Check to see that the reading is within the limits listed in the table.

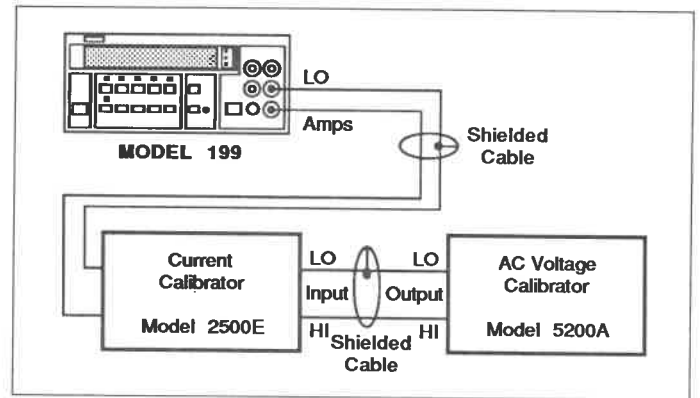


Figure 4-6. Connections for TRMS AC Current Verification

Table 4-6. Limits for AC Current Verification

199 Range	Applied AC Current	Allowable Readings (18°C to 28°C)		
		20Hz	45Hz	5kHz
30mA	29.0000mA	28.4100 to 29.5900	28.8160 to 29.1840	28.8160 to 29.1840
3 A	2.90000A	2.84100 to 2.95900	2.88160 to 2.91840	2.88160 to 2.91840