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TECHNICAL MANUAL

CALIBRATION PROCEDURE

FOR

MULTIMETERS

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MULTIMETERS

This procedure describes the Calibration Process of Multimeters, P/Ns listed in alphanumerical order in Appendix A, with specifications and Calibration Performance Tables.

1 CALIBRATION DESCRIPTION:

See Appendix A for TI being calibrated.

2 EQUIPMENT REQUIREMENTS:

	Noun	Minimum Use Specifications	Calibration Equipment	Sub-Item
2.1	METER CALIBRATOR	Range: 0 to 1100 VDC; 0 to 1100 VAC @ 60/400 Hz; 0 to 11 ADC; 0 to 11 AAC @ 60/400 Hz; Wideband flatness, 0 to 3.5 VAC @ 10 Hz to 3 MHz Accuracy: ±0.5% of output; Wideband flatness, ±0.7758% of output	Fluke 5700Aw/5725A	
2.2	DECADE RESISTOR	Range: 0 to 11,111.1 Ω Accuracy: ±0.25% of setting	ESI DB62-11k	
2.3	DECADE RESISTOR	Range: 0 to 11.1111 MΩ Accuracy: ±0.25% of setting	ESI DB62-11M	
2.4	DC VOLTAGE SOURCE	Range: 0 to 10 kV DC Accuracy: N/A	San Antonio ALC MD-1	
2.5	DC VOLTAGE DIVIDER	Range: 1000:1 ratio Accuracy: ±0.01% of output	Fluke 80E-10	
2.6	DIFFERENTIAL VOLTMETER	Range: 0 to 500 VDC Accuracy: ±0.05% of rdg	Fluke 887AB	
2.7	DIGITAL MULTIMETER	Range: 1 Ω; 0 to 1 VAC @ 60/400 Hz Accuracy: Ω, N/A; ±0.5% of rdg, VAC	Fluke 8840A/AF	

Noun	Minimum Use Specifications	Calibration Equipment	Sub-Item
2.8 TRANSCONDUCTANCE AMPLIFIER	Range: 0 to 100 ADC; 0 to 100 AAC @ 60/400 Hz Accuracy: ADC, ±(0.02% of rdg + 0.02% of rng); AAC, ±(0.1% of rdg + 0.02% of rng)	Clarke Hess 8100	

3 PRELIMINARY OPERATIONS:

3.1 Review and become familiar with the entire procedure before beginning the Calibration Process.

WARNING

Unless otherwise designated, and prior to beginning the Calibration Process, ensure that all test equipment voltage and/or current outputs are set to zero (0) or turned off, where applicable. Ensure that all equipment switches are set to the proper position before making connections or applying power.

WARNING

Voltages hazardous to personnel may be encountered during the sequence of these test procedures. All necessary precautions during the conductance of these tests must be observed.

3.2 Connect test equipment to an appropriate power source. Set all POWER switches to ON and allow warm-up as required by the manufacturer.

3.3 Mechanically zero TI meter pointer when required.

3.4 Use only that portion of Calibration Process section and Calibration Performance Table applicable to TI ranges being calibrated.

NOTE

If the accessories that add a range or function to TI do not accompany TI, the range or function, although listed in Appendix A, need not be calibrated. The TI will be considered fully calibrated if all basic ranges and functions are certified and a Limited Calibration Certificate will not be required. If the referenced accessories do accompany TI, the ranges or functions will be calibrated and a separate Calibration Certificate will be attached to the accessory. This certificate will be annotated with ID number of TI. Do not assign separate ID numbers to these accessories.

CAUTION

The SAFE SWITCH on the FOURDEE model of the AN/PSM-37 is make-and-break switch that only opens the negative lead.

3.5 The insulation of TI with metal cases shall be tested prior to and following calibration and/or maintenance for all function and range switch positions with 1000 VDC applied between the panel jacks and the case. The MD-1 must indicate <200 μA. If plastic case/metal face plate, determine if this test will damage internal components before applying test voltage. If so, do not perform test.

CAUTION

Connect HIGH VOLTAGE terminal to INPUT JACKS and GROUND terminal to CASE. Damaging voltages to the equipment may be encountered during the sequence of these test procedures. All necessary precautions during the conduct of these tests must be observed.

NOTE

The TIs with analog meters need full calibration in either the horizontal or vertical position only. The other position will be certified by repeating the linearity portion of the DC Voltage Calibration and ensuring that the TI stays within corresponding limits. Readjust mechanical zero if necessary. Annotate the position in which the TI was fully calibrated on the Certification Label. This note does not apply to TIs with specifications for a particular position only.

NOTE

Contact the owner of the TI, in order to calibrate the TI in the position it will be used.

3.6 For TIs having a meter protection circuit, check for proper operation.

4 CALIBRATION PROCESS:

NOTE

Unless otherwise specified, verify the results of each test and take corrective action whenever the test requirement is not met, before proceeding.

NOTE

TIs that have a basic voltage range greater than 1000 V need be calibrated above 1000 V only if requested by the user. PMELs must inform users of the need to request this calibration. A Limited Certification Label will be attached, and annotated as Not Calibrated above 1000 V. This does not apply to TIs that require accessories to establish the higher voltage range.

4.1 DC VOLTS CALIBRATION:

NOTE

For voltages >1000 VDC, use para 4.6. If using the 5700A for voltages ≤220 mV, lock the 5700A to the 2.2 Volt Range.

4.1.1 Connect TI DC VOLTS terminals to Meter Calibrator OUTPUT terminals required for the voltage listed in the Applied column, observing polarity.

4.1.2 Set TI controls for the range listed in the Range column. Some TIs require the test leads be changed to different jacks for range changes.

4.1.3 Set Meter Calibrator controls for the first value listed in the Applied column, OPR/STBY switch to OPR, and edit the output until TI indicates the applied value.

NOTE

If full scale of the Meter Calibrator is exceeded, adjust Meter Calibrator for full scale and read tolerance on the TI scale. If the TI scale does not allow for an accurate reading of the tolerance, select the next lower cardinal point on the TI scale and apply the tolerance to the Meter Calibrator indication.

4.1.4 The Meter Calibrator must indicate within the corresponding values listed in the Limits column.

4.1.5 Set Meter Calibrator OPR/STBY switch to STBY.

4.1.6 Repeat steps 4.1.2 through 4.1.5 for each value listed in the Range and Applied columns.

4.1.7 If applicable, set TI polarity switch to negative position and repeat steps 4.1.2 through 4.1.5 on the same range as DC Linearity was checked and the Meter Calibrator controls set for negative output.

4.1.8 Disconnect TI from Meter Calibrator.

4.2 DC CURRENT CALIBRATION:

4.2.1 Perform steps 4.2.2 through 4.2.8 when calibrating TIs with current values up to 11 ADC. Perform steps 4.2.9 through 4.2.17 only when calibrating TIs with current values above 11 ADC.

4.2.2 Connect TI DC CURRENT terminals to Meter Calibrator OUTPUT terminals required for the current listed in the Applied column, observing polarity.

NOTE

For current ≥2.2 A, use the Amplifier CURRENT OUTPUT terminals and set BOOST on when required.

4.2.3 Set TI controls for the range listed in the Range column. Some TIs require the test leads be changed to different jacks for range changes.

4.2.4 Set Meter Calibrator controls for the first value listed in the Applied column, OPR/STBY switch to OPR, and edit the output until TI indicates the applied value.

NOTE

If full scale of the Meter Calibrator is exceeded, adjust Meter Calibrator for full scale and read tolerance on the TI scale. If the TI scale does not allow for an accurate reading of the tolerance, select the next lower cardinal point on the TI scale and apply the tolerance to the Meter Calibrator indication.

4.2.5 The Meter Calibrator must indicate within the corresponding values listed in the Limits column.

4.2.6 Set Meter Calibrator OPR/STBY switch to STBY.

4.2.7 Repeat steps 4.2.2 through 4.2.6 for each value listed in the Range and Applied columns.

4.2.8 Disconnect TI from Meter Calibrator.

4.2.9 Connect the Meter Calibrator OUTPUT terminals to the Transconductance Amplifier INPUT terminals, observing polarity, and the Transconductance Amplifier 20A AND 100 A RANGE OUTPUT terminals to the TI DC CURRENT terminals, observing polarity.

4.2.10 Set TI controls for the range listed in the Range column. Some TIs require the test leads be changed to different jacks for range changes.

4.2.11 Set Meter Calibrator and Transconductance Amplifier controls to obtain the required value listed in the Applied column.

4.2.12 Set Meter Calibrator OPR/STBY switch to OPR and the Transconductance Amplifier to OPERATE.

4.2.13 Edit the Meter Calibrator output until TI indicates the applied value.

NOTE

If full scale of the Meter Calibrator is exceeded, adjust Meter Calibrator for full scale and read tolerance on the TI scale. If the TI scale does not allow for an accurate reading of the tolerance, select the next lower cardinal point on the TI scale and apply the tolerance to the Meter Calibrator indication.

4.2.14 The equivalent DC Voltage of the Meter Calibrator (i.e., with Transconductance Amplifier set to the 20 A range, multiply the Meter Calibrator VDC indication by 10, or with Transconductance Amplifier set to the 100 A range, multiply the Meter Calibrator VDC indication by 100, to obtain the equivalent ADC) must indicate within the corresponding values listed in the Limits column.

4.2.15 Set the Transconductance Amplifier to STANDBY and the Meter Calibrator OPR/STBY switch to STBY.

4.2.16 Repeat steps 4.2.10 through 4.2.15 for each value listed in the Range and Applied columns.

4.2.17 Disconnect test setup.

4.3 AC VOLTS CALIBRATION:

4.3.1 Connect TI AC VOLTS terminals to Meter Calibrator OUTPUT terminals required for the voltage listed in the Applied column.

4.3.2 Set TI controls for the range listed in the Range column. Some TIs require the test leads be changed to different jacks for range changes.

4.3.3 Adjust Meter Calibrator controls until TI indicates the value listed in the Applied column at 60 Hz.

NOTE

If full scale of the Meter Calibrator is exceeded, adjust Meter Calibrator for full scale and read tolerance on the TI scale. If the TI scale does not allow for an accurate reading of the tolerance, select the next lower cardinal point on the TI scale and apply the tolerance to the Meter Calibrator indication.

4.3.4 The Meter Calibrator must indicate within the corresponding values listed in the Limits column.

4.3.5 Repeat steps 4.3.2 through 4.3.4 for each value listed in the Range and Applied columns.

4.3.6 Repeat steps 4.3.2 through 4.3.4 for each full scale value listed in the Range and Applied columns at 400 Hz.

4.3.7 Disconnect TI from Meter Calibrator.

4.4 AC CURRENT CALIBRATION:

4.4.1 Perform steps 4.4.2 through 4.4.8 when calibrating TIs with current values up to 11 AAC. Perform steps 4.4.9 through 4.4.17 only when calibrating TIs with current values above 11 AAC.

4.4.2 Connect TI AC Current Terminals to Meter Calibrator OUTPUT terminals required for the current listed in the Applied column.

NOTE

For current ≥2.2 A, use the Amplifier CURRENT OUTPUT terminals and set BOOST on when required.

4.4.3 Set TI controls for the range listed in the Range column. Some TIs require the test leads be changed to different jacks for range changes.

4.4.4 Set Meter Calibrator for the first value listed in the Applied column at 60 Hz (unless otherwise specified in CPT), OPR/STBY switch to OPR, and edit the output until TI indicates the applied value.

NOTE

If full scale of the Meter Calibrator is exceeded, adjust Meter Calibrator for full scale and read tolerance on the TI scale. If the TI scale does not allow for an accurate reading of the tolerance, select the next lower cardinal point on the TI scale and apply the tolerance to the Meter Calibrator indication.

4.4.5 The Meter Calibrator must indicate within the corresponding values listed in the Limits column.

4.4.6 Set Meter Calibrator OPR/STBY switch to STBY.

4.4.7 Repeat steps 4.4.2 through 4.4.6 for each value listed in the Range and Applied columns.

4.4.8 Disconnect TI from Meter Calibrator.

4.4.9 Connect the Meter Calibrator OUTPUT terminals to the Transconductance Amplifier INPUT terminals, observing polarity, and the Transconductance Amplifier 20A AND 100 A RANGE OUTPUT terminals to the TI AC CURRENT terminals, observing polarity.

4.4.10 Set TI controls for the range listed in the Range column. Some TIs require the test leads be changed to different jacks for range changes.

4.4.11 Set Meter Calibrator and Transconductance Amplifier controls to obtain the required value listed in the Applied column.

4.4.12 Set Meter Calibrator OPR/STBY switch to OPR and the Transconductance Amplifier to OPERATE.

4.4.13 Edit the Meter Calibrator output until TI indicates the applied value.

NOTE

If full scale of the Meter Calibrator is exceeded, adjust Meter Calibrator for full scale and read tolerance on the TI scale. If the TI scale does not allow for an accurate reading of the tolerance, select the next lower cardinal point on the TI scale and apply the tolerance to the Meter Calibrator indication.

4.4.14 The equivalent AC Voltage of the Meter Calibrator (i.e., with Transconductance Amplifier set to the 20 A range, multiply the Meter Calibrator VAC indication by 10, or with Transconductance Amplifier set to the 100 A range, multiply the Meter Calibrator VAC indication by 100, to obtain the equivalent AAC) must indicate within the corresponding values listed in the Limits column.

4.4.15 Set the Transconductance Amplifier to STANDBY and the Meter Calibrator OPR/STBY switch to STBY.

4.4.16 Repeat steps 4.4.10 through 4.4.15 for each value listed in the Range and Applied columns.

4.4.17 Disconnect test setup.

4.5 RESISTANCE CALIBRATION:

4.5.1 Connect TI OHMS terminals to the appropriate Decade Resistor (2.2 or 2.3) INPUT terminals for the range being calibrated.

4.5.2 Set TI controls for the range listed in the Range column. Some TIs require the test leads be changed to different jacks for range changes.

NOTE

Set Decade Resistor (2.2 or 2.3) to zero (0) ohms and adjust OHMS ADJ control for zero (0) ohms at each ohms position of Range switch before calibration.

4.5.3 Adjust the Decade Resistor (2.2 or 2.3) until TI indicates the first value listed in the Applied column.

4.5.4 The Decade Resistor (2.2 or 2.3) must indicate within the corresponding values listed in the Limits column.

4.5.5 Repeat steps 4.5.1 through 4.5.4 for each remaining value listed in the Range and Applied columns.

4.5.6 Disconnect TI from Decade Resistor (2.2 or 2.3).

NOTE

All resistance accuracies not specified in ohms will remain as listed until additional data is received at AGMC/MLEP to be used for proper calculation.

4.6 HIGH VOLTAGE CALIBRATION:

4.6.1 Connect the equipment as shown in Figure 1.

CAUTION

MD-1 output voltage has negative polarity. If substitute equipment is used, determine output polarity before use. Ensure polarity selection on TI before applying power. Damaging voltages to the equipment may be encountered during the sequence of these test procedures. All necessary precautions during the conduct of these tests must be observed.

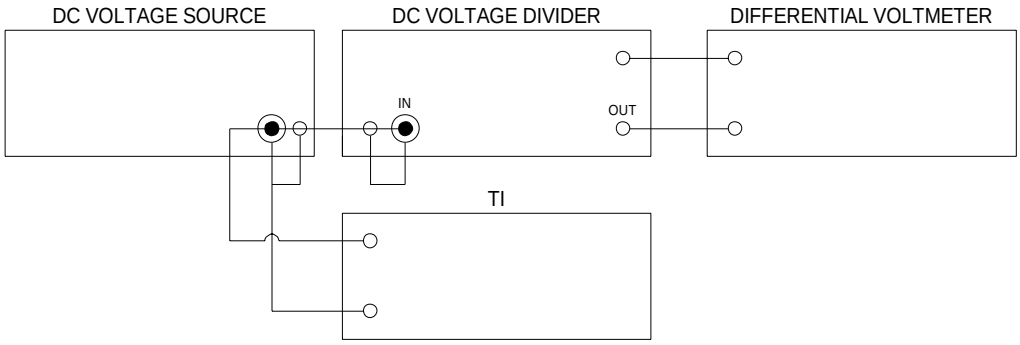

Figure 1.

4.6.2 Set TI RANGE switch to the high voltage range being calibrated.

4.6.3 Set the DC Voltage Source POWER switch to ON, RANGE switch to 15 kV position, CURRENT RANGE switch to OFF, and adjust the output until the Differential Voltmeter at null indicates the required calibrated value or values.

4.6.4 Record the exact TI indication for each required calibrated value of step 4.6.3.

NOTE

If a calibration chart is not required as specified in step 4.6.5 the recorded value of step 4.6.4 must be within the specifications listed for TI being calibrated.

4.6.5 When requested by the customer, construct a calibration chart listing the actual TI indications as recorded in step 4.6.4 and attach it to TI and the High Voltage Probe.

4.6.6 Set DC Voltage Source output to OFF and disconnect and secure the equipment.

4.7 FREQUENCY RESPONSE CALIBRATION:

4.7.1 Set TI FUNCTION switch to ACV and RANGE switch to 3 V or the position indicated.

4.7.2 Connect TI INPUT to the Meter Calibrator WIDEBAND connector (use the cable and 50 Ω feedthrough terminator supplied with the Meter Calibrator), observing polarity. Press Meter Calibrator W BND.

4.7.3 Set Meter Calibrator controls for a 1 kHz signal, OPR/STBY switch to OPR, and edit the output level until TI indicates the applied value.

4.7.4 Adjust the Meter Calibrator frequency to cover the range of TI being calibrated.

4.7.5 The TI must indicate within the values listed in the Limits column.

4.7.6 Set Meter Calibrator OPR/STBY switch to STBY.

4.7.7 Disconnect TI from the Meter Calibrator and secure all equipment.

APPENDIX A

MULTIMETERS

SPECIFICATIONS AND CALIBRATION PERFORMANCE TABLES

AM1, AM-1A VOLT-OHM-MILLIAMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 15, 30, 150, 300
	Accuracy: ±3% of FS
AC Volts	Ranges: 0 to 3, 15, 30, 150, 300
	Accuracy: ±4% of FS
Resistance	Ranges: R X 1, R X 10, R X 100, R X 1 k
	Accuracy: ±3% of arc
DC Current	Ranges: 0 to 30, 150 mA
	Accuracy: ±3% of FS
DC Millivolt	Ranges: 0 to 60, 1200
	Accuracy: ±3% of FS

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
300	300	291 to 309
150	150	145.5 to 154.5
30	30	29.1 to 30.9
	20	19.1 to 20.9
	10	9.1 to 10.9
15	15	14.55 to 15.45
3	3	2.91 to 3.09

DC CURRENT CALIBRATION:

Range	Applied (mA)	Limits (mA)
150	150	145.5 to 154.5
	100	95.5 to 104.5
	50	45.5 to 54.5
30	30	29.1 to 30.9

CALIBRATION PERFORMANCE TABLE (Cont.)

DC MILLIVOLT CALIBRATION:

Range	Applied (mV)	Limits (mV)
1200	1200	1164 to 1236
	1000	964 to 1036
	800	764 to 836
	600	564 to 636
	400	364 to 436
	200	164 to 236
60	60	58.2 to 61.8

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
300	300	288 to 312
150	150	144 to 156
30	30	28.8 to 31.2
	20	18.8 to 21.2
	10	8.8 to 11.2
15	15	14.4 to 15.6
3	3	2.88 to 3.12

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 10	100	95 to 105
R X 100	1 k	950 to 1050
R X 1 k	10 k	9.5 k to 10.5 k

AM-2A, AM-2DP VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000
	Accuracy: ±3.0% of FS
AC Volts	Ranges: 0 to 10, 50, 250, 500, 1000
	Accuracy: ±4.0% of FS
Resistance	Ranges: R X 1, R X 10, R X 100
	Accuracy: ±3.0% of arc
DC Current	Ranges: 0 to 50 μA, 0 to 25, 250 mA
	Accuracy: 3.0% of FS

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
1000	900	870 to 930
250	240	232 to 248
50	48	46.5 to 49.5
	40	38.5 to 41.5
	30	28.5 to 31.5
	20	18.5 to 21.5
	10	8.5 to 11.5
10	9	8.7 to 9.3
2.5	2.4	2.3 to 2.5

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
1000 *	950	910 to 990
500 **	480	460 to 500
250	240	230 to 250
50	48	46 to 50

CALIBRATION PERFORMANCE TABLE *(Cont.)*

AC VOLTS CALIBRATION: (Cont.)

Range	Applied (V)	Limits (V)
50	40	38 to 42
	30	28 to 32
	20	18 to 22
	10	8 to 12
10	9	8.6 to 9.4
	5	4.6 to 5.4
	2	1.6 to 2.4

* Read on AC50V UP scale 0-10 scale Multiply by 100
** Read on 0-50 scale Multiply by 10

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	9	8.5 to 9.5
R X 10	90	85 to 95
R X 100	900	850 to 950

DC CURRENT CALIBRATION:

Range	Applied	Limits (mA)
25 mA	20 mA	19.2 to 20.8
250 mA	240 mA	239.2 to 240.8

AM5 MULTI-PROBE TESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1999 mV, 199.9, 1000 VDC
	Accuracy: ±(1.0% of rdg + 1 digit)
AC Volts	Ranges: 0 to 1999 mV, 199.9, 1000 VAC
	Accuracy: ±(2.0% of rdg + 4 digits)
DC Current	Ranges: 0 to 199.9, 1999 µA, 0 to 19.9 mA
	Accuracy: ±(1.0% of rdg + 1 digit)
AC Current	Ranges: 0 to 199.9, 1999 µA, 0 to 19.9 mA
	Accuracy: ±(2.0% of rdg + 4 digits)
Resistance	Ranges: 199.9, 1999 Ω; 0 to 19.99 kΩ
	Accuracy: 199.9 Ω range, ±(2% of rdg +4 digits); 1999 and 19.99 kΩ ranges, ±(2% rdg + 2 digits)

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (VDC)	Limits (VDC)
1000	900	890 to 910
199.9	150	148.4 to 151.6
	100	98.9 to 101.1
	50	49.49 to 50.51
1999 m	1.5	1.484 to 1.516

DC CURRENT CALIBRATION:

Range	Applied	Limits
19.99 mA	15 mA	14.84 to 15.16
1999 µA	1.5 mA	1.484 to 1.516
199.9 µA	100 µA	98.9 to 101.1

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (VAC)	Applied (VAC)	Limits (VAC)
1000	900	878 to 922
199.9	190	185.8 to 194.2
	150	146.6 to 153.4
	100	97.6 to 102.4
1999 m	1.5	1.466 to 1.534

AC CURRENT CALIBRATION:

Range	Applied	Limits
19.99 mA	15 mA	14.66 to 15.34
1999 µA	1.5 mA	1.466 to 1.534
199.9 µA	100 µA	97.6 to 102.4

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
199.9	190	185.8 to 194.2
1999	1900	1860 to 1940
19.99 k	19 k	18.60 to 19.40 k

AN/PSM-4 MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2, 4, 10, 20, 40, 100, 200, 400, 1000, 4000 V Accuracy: ±3% FS 2 to 1000 V ranges. ±4% FS 4000 V range
DC Current	Ranges: 0 to 100 µA 0 to 1, 4, 10, 40, 100, 400, 1000 mA 0 to 10 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2, 4, 10, 20, 40, 100, 200, 400, 1000 V Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 10000 Ω, center scale 30 Ω R X 10 0 to 100000 Ω, center scale 300 Ω R X 100 0 to 1 MΩ, center scale 3000 Ω R X 1000 0 to 10 MΩ , center scale 30000 Ω R X 10000 0 to 100 MΩ , center scale 300000 Ω Accuracy: ±3° of arc length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
4000	1840	1680 to 2000
4000	1000	840 to 1160
1000	1000	970 to 1030
400	400	388 to 412
200	200	194 to 206
100	100	97 to 103
	75	72 to 78
	50	47 to 53
	25	22 to 28

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
40	40	38.8 to 41.2
20	20	19.4 to 20.6
10	10	9.7 to 10.3
4	4	3.88 to 4.12
2	2	1.94 to 2.06

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
1000 mA	1000 mA	970 to 1030 mA
400 mA	400 mA	388 to 412 mA
100 mA	100 mA	97 to 103 mA
40 mA	40 mA	38.8 to 41.2 mA
10 mA	10 mA	9.7 to 10.3 mA
4 mA	4 mA	3.88 to 4.12 mA
1 mA	1 mA	0.97 to 1.03 mA
100 µA	100 µA	97 to 103 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
400	400	380 to 420
200	200	190 to 210
100	100	95 to 105
	75	70 to 80
	50	45 to 55
	25	20 to 30
40	40	38 to 42
20	20	19 to 21
10	10	9.5 to 10.5
4	4	3.8 to 4.2
2	2	1.9 to 2.1

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	30	27 to 34
R X 10	300	270 to 340
R X 100	3 k	2.7 k to 3.4 k
R X 1 k	30 k	27 k to 34 k
R X 10 k	300 k	270 k to 340 k

AN/PSM-4A, B, C, D MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1000, 5000 V Accuracy: ±3% FS 2.5 to 1000 V Ranges ±4% FS 5000 V Ranges
DC Current	Ranges: 0 to 100 μA 0 to 1, 5, 10, 50, 100, 500, 1000 mA 0 to 10 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1000 V Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 3,000 Ω R X 10 0 to 30,000 Ω R X 100 0 to 300,000 Ω R X 1 k 0 to 3 MΩ R X 10 k 0 to 30 MΩ Accuracy: ±3° of arc length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000 *	1800	1600 to 2000
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
	200	192.5 to 207.5
	150	142.5 to 157.5
	100	92.5 to 107.5
	50	42.5 to 57.5
100	100	97 to 193

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
50	50	48.5 to 51.5
25	25	24.25 to 25.75
10	10	9.7 to 10.3
5	5	4.85 to 5.15
2.5	2.5	2.425 to 2.575

* Use High Voltage Test Probe W-103

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
1000 mA	1000 mA	970 to 1030 mA
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
50 mA	50 mA	48.5 to 51.5 mA
10 mA	10 mA	9.7 to 10.3 mA
5 mA	5 mA	4.85 to 5.15 mA
1 mA	1 mA	0.97 to 1.03 mA
100 µA	100 µA	97 to 103 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
500	500	475 to 525
250	250	237.5 to 262.5
	200	187.5 to 212.5
	150	137.5 to 162.5
	100	87.5 to 112.5
	50	37.5 to 62.5
100	100	95 to 105
50	50	47.5 to 52.5
25	25	23.75 to 26.25

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
10	10	9.5 to 10.5
5	5	4.75 to 5.25
2.5	2.5	2.375 to 2.625

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	30	27 to 34
R X 10	300	270 to 340
R X 100	3 k	2.7 k to 3.4 k
R X 1 k	30 k	27 k to 34 k
R X 10 k	300 k	270 k to 340 k

P/N AN/PSM-4E, 4F

TI Characteristics	Performance Specifications
DC Volts	Ranges: 2.5, 5, 10, 25, 50, 100, 250, 500, and 1000 VDC
	Accuracy: ±3% FS
	Range: 5000 VDC
	Accuracy: ±4% FS
DC Current	Ranges: 100 µA, 1 mA, 5 mA, 10 mA, 50 mA, 100 mA, 500 mA, 1000 mA and 10 ADC
	Accuracy: ±3% FS
AC Voltage	Ranges: 2.5, 5, 10, 25, 50, 100, 250, 500, and 1000 VAC
	Accuracy: ±5% FS
Resistance	Ranges: R X 1, R X 10, R X 100, R X 1000, R X 10000
	Accuracy: ±3° of arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000 *	1800	1600 to 2000
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
	200	192.5 to 207.5
	150	142.5 to 157.5
	100	92.5 to 107.5
	50	42.5 to 57.5
100	100	97 to 103
50	50	48.5 to 51.5
25	25	24.25 to 25.75

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
10	10	9.7 to 10.3
5	5	4.85 to 5.15
2.5	2.5	2.425 to 2.575

* Use High Voltage Test Probe W-103

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3
1000 mA	1000 mA	970 to 1030 mA
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
50 mA	50 mA	48.5 to 51.5 mA
10 mA	10 mA	9.7 to 10.3 mA
5 mA	5 mA	4.85 to 5.15 mA
1 mA	1 mA	0.97 to 1.03 mA
100 µA	100 µA	97 to 103 µA

AC VOLTAGE CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
500	500	475 to 525
250	250	237.5 to 262.5
100	100	95 to 105
50	50	47.5 to 52.5
25	25	23.75 to 26.25
10	10	9.5 to 10.5
5	5	4.75 to 5.25
2.5	2.5	2.375 to 2.625

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	30	27 to 34
R X 10	300	270 to 340
R X 100	3 k	2.7 k to 3.4 k
R X 1 k	30 k	27 k to 34 k
R X 10 k	300 k	270 k to 340 k

AN/PSM6 ( ) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.5, 2.5, 10, 50, 250, 500, 1000, 5000 V Accuracy: ±3% of FS
DC Current	Ranges: 0 to 100 µA 0 to 0.5, 2.5, 10, 50, 250, 500 mA 0 to 1, 2.5, 10 A Accuracy: ±3% of FS
AC Volts	Ranges: 0 to 0.5, 2.5, 10, 50, 250, 500, 1000 V Accuracy: ±4% of FS, 2.5 to 1000 V ranges
Resistance	Ranges: R X 1 0 to 1,000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100,000 Ω R X 1,000 0 to 1 MΩ R X 10,000 0 to 10 MΩ Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

WARNING

Comply with para 3.5 before beginning calibration and whenever any corrective action is performed to TI during initial calibration. The insulation shall be tested for all FUNCTION and RANGE switch positions with 1000 VDC applied between the panel jacks and the case. The panel jacks shall be connected together. Leakage current shall not exceed 200 µA.

WARNING

Voltages hazardous to personnel may be encountered during the sequence of these test procedures. All necessary precautions during the conduct of these tests must be observed.

OVERLOAD CALIBRATION: (Not required for AN/PSM6)

NOTE

AN/PSM-6A multimeters have had the overload protection circuitry disabled. Do not perform the Overload Calibration on these meters. If the reset button is still installed, annotate on the calibration label, "OVERLOAD PROTECTION DISABLED".

CALIBRATION PERFORMANCE TABLE (Cont.)

Connect TI to the Meter Calibrator and perform the following: Monitor voltage Output.

Function	Range	Applied	Limits
DCMA	0.5 mA	+100 mADC	OL
DC Volts, 20 kΩ/V	50 V	+500 VDC	OL
DC Volts, 1 kΩ/V	0.5 V	+50 VDC	OL
AC Volts	2.5 V	+50 VDC	OL

DC VOLTS, 20 k OHM/V CALIBRATION: (0.5 to 5000 V)

Range	Applied (V)	Limits (V)
5000 *	4800	4650 to 4950
1000	1000	970 to 1030
500	500	485 to 515
	400	385 to 415
	300	285 to 315
	200	185 to 215
	100	85 to 115
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
2.5	2.5	2.425 to 2.575
0.5	0.5	0.485 to 0.515

* RANGE switch at 500 V and Test Prod MX1410/U (Calibrate 5000 V only if Test Prod MX1410/U accompanies the TI.)

DC VOLTS, 1 k OHM/V CALIBRATION: (0.5 to 1000 V)

NOTE

Use same calibration as DC Volts, 20 kΩ/V except delete 5000 V range check.

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A * (10)	10 A	9.7 to 10.3 A
2.5 A * (2.5)	2.5 A	2.425 to 2.575 A
1 A	1 A	0.970 to 1.03 A
500 mA	500 mA	485 to 515 mA
250 mA	250 mA	242.5 to 257.5 mA
50 mA	50 mA	48.5 to 51.5 mA
10 mA	10 mA	9.7 to 10.3 mA
2.5 mA	2.5 mA	2.425 to 2.575 mA
0.5 mA	0.5 mA	0.485 to 0.515 mA
100 µA	100 µA	97 to 103 µA

* Set RANGE switch to 10 or 2.5 and use Shunt MX1409/U (Calibrate 10 AMP or 2.5 AMP ranges only if Current Shunt MX1409/U accompanies the TI.)

AC VOLTS, 1 k OHM/V CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
500	500	480 to 520
	400	380 to 420
	300	280 to 320
	200	180 to 220
	100	80 to 120
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
2.5	2.5	2.4 to 2.6
0.5	0.5	Approximately 0.5 no accuracy listed

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION: (AN-PSM6)

Range	Applied (Ω)	Limits
R X 1	25	22 to 28
R X 10	250	220 to 280
R X 100	2500	2200 to 2800
R X 1000	25 k	22 k to 28 k
R X 10,000	250 k	220 k to 280 k

AN/PSM-37 (QVS) (FOURDEE), 910, 911, 960, 961 (QVS) MULTIMETER

TI Characteristics	Performance Specifications
	(horizontal & vertical positions)
DC Volts	Ranges: 0 to 1000 V, 5000 V w/MX 1410/U
	Accuracy: ±3% FS
DC Amps	Ranges: 0 to 1 A, (2.5 A and 10 A w/MX 9127/PSM-37)
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 1000 V
	Accuracy: ±4% FS
AC Amps	Ranges: 0 to 1 A, (2.5 A and 10 A w/MX 9127/PSM-37)
	Accuracy: ±4% FS
Resistance	Ranges: 0 to 100 MΩ
	Accuracy: ±3% Scale Length
Frequency Response	Range: 20 Hz to 30 kHz
	Accuracy: 20 Hz to 400 Hz, ±4% FS; 400 Hz to 30 kHz, ±10% FS

CAUTION

Ensure only plastic screws are used to mount switch knobs to shafts.

NOTE

AC and DC voltages may be measured directly in ranges of 0 to 1000 V at Input Impedances of 1000 Ω/V, 20,000 Ω/V or at a fixed 10 MΩ. For voltages below 100 mV, set FUNCTION selector to SPECIAL position.

NOTE

Short positive and negative leads together. Set RANGE switch to 0.5 V, FUNCTION switch to 10 MΩ/V, POLARITY switch to POSITIVE. TI must indicate (0) zero ±1 division.

CALIBRATION PERFORMANCE TABLE

OVERLOAD CALIBRATION: (Not required on model manufactured by Fourdee)

Function	Polarity	Range	Applied	Limits
Special	DC+	any*	+12 V	OL
	DC-	any*	-12 V	OL
Amps - mA	DC+	0.5 V	+12 V	OL
	DC-	0.5 V	-12 V	OL

CALIBRATION PERFORMANCE TABLE (Cont.)

OVERLOAD CALIBRATION: (Not required on model manufactured by Fourdee) (Cont.)

Function	Polarity	Range	Applied	Limits
20 kΩ/V	AC	0.5 V	50 V, AC, 60 Hz	OL
	DC+	0.5 V	50 V, AC, 60 Hz	OL
	DC-	0.5 V	50 V, AC, 60 Hz	OL
1 kΩ/V	DC+	0.5 V	+12 V	OL
	DC-	0.5 V	-12 V	OL

* Except 0.5 V range (OL = overload)

NOTE

Adjust the Meter Calibrator to the applied value before applying TI probes (Monitor Voltage Output). If overload calibration fails, refer to T.O. 33A1-12-933-1, Section 5-45, 5-46 and 5-47.

AC VOLTS CALIBRATION: (1000 Ω/V, 20000 Ω/V and 10 M)

Range	Applied (VAC)	Limits (VAC)
1000	1000	960 to 1040
500	500	480 to 520
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
2.5	2.5	2.4 to 2.6
0.5 *	0.5	0.48 to 0.52

* It may be necessary to use shielded leads or connect standard - (neg) terminal to earth ground when making measurement in the 10 M Ω/V function.

AC MILLIVOLTS CALIBRATION: (Because of Loading, monitor the Meter Calibrator output with the Digital Multimeter for this calibration)

Function	Range	Applied (mV)	Limits (mV)
SPECIAL (100 mV)	Any	100	96 to 104

AC MICROAMPERES CALIBRATION:

Function	Range	Applied (µA)	Limits (µA)
SPECIAL (100 µA)	Any	100	96 to 104

CALIBRATION PERFORMANCE TABLE (Cont.)

AC MILLIAMPERES CALIBRATION:

Function	Range	Applied (mA)	Limits (mA)
AMP-mA	1000	1000	960 to 1040
	500	500	480 to 520
	250	250	240 to 260
	50	50	48 to 52
	10 *	10	9.6 to 10.4
	2.5 *	2.5	2.4 to 2.6
	0.5	0.5	0.48 to 0.52

NOTE

* Connect SHUNT MX-9127/PSM-37 to TI test leads and Current Standard to 2.5 A section, set RANGE switch to 2.5 mA and apply 2.5 A. The TI must indicate within 2.4 and 2.6 A. Reconnect Current Standard to 10 A section of MX-9127/PSM-37 and set range switch to 10 mA. Apply 10 A, TI must indicate within 9.6 and 10.4. (Perform this only if SHUNT accompanies TI).

OHMS CALIBRATION: (See Note)

Function	Range	Applied (Ω)	Limits (Ω)
OHMS-LP	R X 1	20	17.5 to 23
	R X 10	200	175 to 230
	R X 100	2 k	1.75 k to 2.3 k
	R X 1 k	20 k	17.5 k to 23 k
	R X 10 k	200 k	175 k to 230 k
	R X 100 k	2 M	1.75 M to 2.3 M
OHMS-STD	R X 1	20	17.5 to 23 (Fourdee only)
	R X 10	200	175 to 230
	R X 100	2 k	1.75 k to 2.3 k
	R X 1 k	20 k	17.5 k to 23 k
	R X 10 k	200 k	175 k to 230 k
	R X 100 k	2 M	1.75 M to 2.3 M

NOTE

Adjust OHMS ADJUST for zero reading on all ranges.

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (1000 Ω /V, 20000 Ω/V and 10 M)

Range	Applied (VDC)	Limits (VDC)
5000 *	4800	4650 to 4950
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
	40	38.5 to 41.5
	30	28.5 to 31.5
	20	18.5 to 21.5
	10	8.5 to 11.5
10	10	9.7 to 10.3
2.5	2.5	2.425 to 2.575
0.5	0.5	0.485 to 0.515

* Use Test Prod MX-1410/U with RANGE switch set at 500 V and FUNCTION switch to 20 kΩ /V or with RANGE switch set at 500 V and FUNCTION switch to 10 MΩ /V position. Omit this check for the 1000 Ω/V function. (Perform this only if the Test Prod MX-1410/U accompanies TI.)

DC MILLIVOLT-SPECIAL CALIBRATION: (Because of Loading, monitor the Meter Calibrator output with the Digital Multimeter for this calibration)

Function	Range	Applied (mV)	Limits (mV)
SPECIAL (100 mV)	Any	100	97 to 103

DC MICROAMPERES-SPECIAL CALIBRATION:

Function	Range	Applied (µA)	Limits (µA)
SPECIAL (100 µA)	Any	100	97 to 103

CALIBRATION PERFORMANCE TABLE (Cont.)

DC MILLIAMPERES CALIBRATION:

Function	Range	Applied (mA)	Limits (mA)
MA	1000	1000	970 to 1030
	500	500	485 to 515
	250	250	242.5 to 257.5
MA	50	50	48.5 to 51.5
	10*	10	9.7 to 10.3
	2.5*	2.5	2.425 to 2.575
	0.5	0.5	0.485 to 0.515

* Connect SHUNT MX-9127/PSM-37 to TI test leads and Current Standard to 2.5 A section, set RANGE switch to 2.5 mA and apply 2.5 A. The TI must indicate within 2.425 and 2.575 A. Reconnect Current Standard to 10 A section of MX-9127/PSM-37 and set range switch to 10 mA. Apply 10 A, TI must indicate within 9.7 and 10.3. (Perform this only if SHUNT accompanies TI).

FREQUENCY RESPONSE CALIBRATION: (1000 Ω/V, 20000 Ω/V and 10 M)

Range (VAC)	Applied	Limits
2.5	1 V @ 400 Hz to 30 kHz	0.75 to 1.25
2.5	1 V @ 20 to 400 Hz	0.9 to 1.1 VAC

AN/URM-105 (LANDERS, FRARY, CLARK) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1, 10, 100, 1000 V
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 100, 1000 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 10 0 to 20,000 Ω R X 100 0 to 200,000 Ω R X 1k 0 to 2 M Ω R X 10k 0 to 20 M Ω
	Accuracy: ±5% of indicated value

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
100	100	97 to 103
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
1	1	0.97 to 1.03

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
100	100	96 to 104
10	10	9.6 to 10.4
	8	7.6 to 8.4

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
10	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4

RESISTANCE CALIBRATION: (AN/URM-105)

Range	Applied (Ω)	Limits
R X 1	100	95 to 105
R X 10	1000	950 to 1050
R X 100	10,000	9,500 to 10,500
R X 1 k	100,000	95,000 to 105,000
R X 10 k	1,000,000	950,000 to 1,050,000

AN/USM-162 MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% FS 2.5 to 1000 V ranges ±5% FS 5000 V range
DC Current	Ranges: 0 to 50 µA 0 to 1, 10, 100, 500 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±5% FS 2.5 to 1000 V ranges ±8% FS 5000 V range
Resistance	Ranges: R X 1 0 to 3,000 Ω R X 100 0 to 300,000 Ω R X 1000 0 to 3 MΩ R X 10,000 0 to 30 MΩ
	Accuracy: ±3° of arc length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied	Limits
5000 *	1750	1500 to 2000
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
	40	38.5 to 41.5
	30	28.5 to 31.5
	20	18.5 to 21.5
	10	8.5 to 11.5
10	10	9.7 to 10.3
2.5	2.5	2.425 to 2.575

* DC High Voltage Prod

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
10 mA	10 mA	9.7 to 10.3 mA
1 mA	1 mA	0.97 to 1.03 mA
50 µA	50 µA	48.5 to 51.5 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000 *	1100	700 to 1500
1000	1000	950 to 1050
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.375 to 2.625

* AC High Voltage Prod

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.6 to 11.5
R X 100	1 k	860 to 1150
R X 1 k	10 k	8.6 k to 11.5 k
R X 10 k	100 k	86 k to 115 k

AN/USM 223, ME297U MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.5, 2.5, 10, 50, 250, 500 and 1000 V at 1,000 or 20,000 Ω per V 0 to 5000 V at 20,000 Ω per V Accuracy: 0 to 500 V (1000 and 20000 Ω per V) ±3% FS 0 to 1000 V (1000 Ω per V) ±3% FS 0 to 1000 V (20000 Ω per V) ±4% FS 0 to 5000 V (1000 and 20000 Ω per V) ±6% FS
DC Current	Ranges: 0 to 0.25, 2.5, 10, 50, 500 and 2,500 mA and 10 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 500, and 1000 V at 1000 Ω per V 0 to 5000 V at 1000 Ω per V Accuracy: 0 to 500 V (1000 Ω per V) ±4% FS 0 to 1000 V (1000 Ω per V) ±5% FS 0 to 5000 V (1000 Ω per V) ±7% FS
Frequency Response	Accuracy: ±4% at 25 Hz to 10 kHz ±7% at 20 kHz
Resistance	Ranges: 0 to 10, 1 k, 10 k, 100 k, 1 M and 10 MΩ Accuracy: ±3% of arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (DVC)	Applied (DVC)	Limits (1 kΩ/V)	Limits (20 kΩ/V)
5000	5000		4700 to 5300 V
5000	1000		700 to 1300
1000	1000	970 to 1030 V	960 to 1040 V
500	500	485 to 515 V	485 to 515 V
250	250	242.5 to 257.5 V	242.5 to 257.5 V
50	50	48.5 to 51.5 V	48.5 to 51.5 V
	40	38.5 to 41.5 V	38.5 to 41.5 V

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (DVC)	Applied (DVC)	Limits (1 kΩ/V)	Limits (20 kΩ/V)
50	30	28.5 to 31.5 V	28.5 to 31.5 V
	20	18.5 to 21.5 V	18.5 to 21.5
	10	8.5 to 11.5 V	8.5 to 11.5
10	10	9.7 to 10.3 V	9.7 to 10.3 V
2.5	2.5		2.425 to 2.575 V
0.5	0.5		0.485 to 0.515 V

AC VOLTS CALIBRATION:

Range (ACV)	Applied (ACV)	Limits (ACV)
5000	1000	650 to 1350
1000	1000	950 to 1050
500	500	480 to 520
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
2.5	2.5	2.4 to 2.6

DC CURRENT CALIBRATION:

Range (DC)	Applied (DC)	Limits (DC)
10 A	10 A	9.7 to 10.3 A
2.5 A	2.5 A	2.425 to 2.575 A
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
50 mA	50 mA	48.5 to 51.5 mA
10 mA	10 mA	9.7 to 10.3 mA
2.5 mA	2.5 mA	2.425 to 2.575 mA
0.25 mA	0.25 mA	0.2425 to 0.2575 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
R X 10000	250 k	220 k to 280 k
R X 1000	25 k	22 k to 28 k
R X 100	2500	2.2 k to 2.8 k
R X 10	250	220 to 280
R X 1	25	22 to 28

DN-D278-4156-1 TEST METER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 4000 through 7 scales
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 8 A through 2 scales 0 to 160 mA through 3 scales 0 to 160 µA through 2 scales
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 800 through 6 scales
	Accuracy: ±3% FS
Resistance	Ranges: 0 to 200 MΩ through 3 scales
	Accuracy: ±3% of arc length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (±3%)
0 to 4000	Center scale value of each range	Center scale value ±3%

DC CURRENT CALIBRATION:

Range (A)	Applied (A)	Limits (±2%)
0 to 8	Center scale value of each range	Center scale value ±2%

Range (mA)	Applied (mA)	Limits (±2%)
0 to 160	Center scale value of each range	Center scale value ±2%

Range (µA)	Applied (µA)	Limits (±2%)
0 to 160	Center scale value of each range	Center scale value ±2%

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (±3%)
0 to 800	Center scale value of each range	Center scale value ±3%

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (±3% of arc length)
0 to 200,000,000	Center scale value of each range	Center scale value ±3% of arc length

FE20 (SENCORE) FIELD EFFECT MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.1, 0.3, 1, 3, 10, 30, 100, 300 and 1000 V FS
	Accuracy: ±1.5% FS
AC Volts (rms)	Ranges: 0 to 0.1, 0.3, 1, 3, 10, 30, 100, 300 and 1000 V FS
	Accuracy: ±3% FS
Frequency Response	Accuracy: ±1 dB at 10 Hz to 150 kHz, ±3 dB at 150 kHz to 500 kHz
DC Current	Ranges: 0 to 100, 300 µA, 1, 3, 10, 30, 100, 300 mA and 1 A
	Accuracy: ±3% FS
Resistance	Ranges: 0 to 1000, 10 k, 100 k, 1 M, 10 M, 100 M, 1000 MΩ with 12 Ω center
	Accuracy: ±2° arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	900	885 to 915
	700	685 to 715
	300	285 to 315
300	300	295.5 to 304.5
	150	145.5 to 154.5
100	100	98.5 to 101.5
30	30	29.55 to 30.45
10	10	9.85 to 10.15
3	3	2.955 to 3.045
1	1	0.985 to 1.015
0.3	0.3	0.2955 to 0.3045
0.1	0.1	0.985 to 0.1015

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	900	873 to 927
300	300	291 to 309
100	100	97 to 103
30	30	29.1 to 30.9
10	10	9.7 to 10.3
3	3	2.91 to 3.09
1	1	0.97 to 1.03
0.3	0.3	0.291 to 0.309
0.1	0.1	0.097 to 0.103

DC CURRENT CALIBRATION:

Range (A)	Applied (A)	Limits (A)
1 A	1 A	0.097 to 1.03 A
300 mA	300 mA	291 to 309 mA
100 mA	100 mA	97 to 103 mA
30 mA	30 mA	29.1 to 30.9 mA
10 mA	10 mA	9.7 to 10.3 mA
3 mA	3 mA	2.91 to 3.09 mA
1 mA	1 mA	0.97 to 1.03 mA
300 µA	300 µA	291 to 309 µA
100 µA	100 µA	97 to 103 µA

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Read on top DC scale)
R X 1	12	0.48 to 0.52
R X 10	120	0.48 to 0.52
R X 100	1.2 k	0.48 to 0.52
R X 1 k	12 k	0.48 to 0.52
R X 10 k	120 k	0.48 to 0.52

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION: (Cont.)

Range (Ω)	Applied (Ω)	Limits (Read on top DC scale)
R X 100 k	1.2 M	0.48 to 0.52
R X 1 M	10 M	9 to 11 (Ω scale)

FREQUENCY RESPONSE CALIBRATION:

Range (V)	Applied (V)	Limits (V)
3 V	1 V @ 10 Hz to 150 kHz	0.8913 to 1.112 V
	1 V @ 150 to 500 kHz	0.7079 to 1.413 V

FE23 (SENCORE) FIELD EFFECT MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 30, 1000 and 6000 V FS
	Accuracy: ±1.5% FS 3 V to 1000 V
	Accuracy: ±3% FS 6000 V
AC Volts (rms)	Ranges: 0 to 3, 30, 300 and 1000 V FS
	Accuracy: All ranges ±3% FS
DC Current	Ranges: 0 to 1 A
	Accuracy: ±3% FS
Resistance	Ranges: 0 to 1,000, 100 k, 10 M and 1000 M with 10 Ω center scale
	Accuracy: ±2° of arc

NOTE

A slight change in calibration is caused by the effects of the sliding meter cover on the magnetic field generated by the meter movement.

1. Depress the DCC 1 AMP pushbutton and adjust the MECHANICAL METER ZERO for a left hand meter indication.

2. Depress the DCV and 3 V pushbutton and adjust ZERO ADJUST control for a zero indication on the TI.

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1820	1640 to 2000
6000	1000	820 to 1180
1000	1000	985 to 1015
	700	685 to 715
	300	285 to 315
300	300	295.5 to 304.5
	150	145.5 to 154.5

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
30	30	29.55 to 30.45
	25	24.55 to 25.45
	20	19.55 to 20.45
	15	14.55 to 15.45
	10	9.55 to 10.45
	5	4.55 to 5.45
3	3	2.955 to 3.045
	1.5	1.455 to 1.545

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
3	3	2.91 to 3.09

DC CURRENT CALIBRATION:

Range (A)	Applied (A)	Limits (A)
1	1	0.97 to 1.03
	0.9	0.87 to 0.93
	0.8	0.77 to 0.83
	0.6	0.57 to 0.63
	0.5	0.47 to 0.53
	0.3	0.27 to 0.33
	0.2	0.17 to 0.23
	0.1	0.07 to 0.13

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9 to 11
R X 100	1 k	900 to 1100
R X 10 k	100 k	90 k to 110 k
R X 1 M	10 M	9 M to 11 M

F1 (WESTON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 1000 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 500 mA
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 1000 V
	Accuracy: ±4% FS
Resistance	Ranges:
	R X 1 0 to 1000 Ω R X 10 0 to 10000 Ω R X 100 0 to 100,000 Ω R X 1000 0 to 1 MΩ
	Accuracy: ±2% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	980 to 1020
250	250	245 to 255
100	100	98 to 102
50	50	49 to 51
25	25	24.5 to 25.5
10	10	9.8 to 10.2
	8	7.8 to 8.2
	6	5.8 to 6.2
	4	3.8 to 4.2
	2	1.8 to 2.2
5	5	4.9 to 5.1
2.5	2.5	2.45 to 2.55
1	1	0.98 to 1.02

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
500	500	490 to 510
250	250	245 to 255
100	100	98 to 102
50	50	49 to 51
25	25	24.5 to 25.5
10	10	9.8 to 10.2
5	5	4.9 to 5.1
2.5	2.5	2.45 to 2.55
1	1	0.98 to 1.02

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
250	250	240 to 260
100	100	96 to 104
50	50	48 to 52
25	25	24 to 26
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
5	5	4.8 to 5.2
2.5	2.5	2.4 to 2.6
1	1	0.96 to 1.04

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.6 to 10.4
R X 10	100	96 to 104
R X 100	1 k	960 to 1040
R X 1 k	10 k	9.6 k to 10.4 k

F-2( ) (WESTON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 15, 30, 150, 300 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 3, 15, 150, 300, 1500 mA
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 3, 15, 30, 150, 300 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 100 0 to 200,000 Ω
	Accuracy: ±2% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
300	300	294 to 306
	200	194 to 206
	100	94 to 106
150	150	147 to 153
30	30	29.4 to 30.6
15	15	14.7 to 15.3
3	3	2.94 to 3.06

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
1500	1500	1470 to 1530
300	300	294 to 306
150	150	147 to 153
15	15	14.7 to 15.3
3	3	2.94 to 3.06

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
300	300	288 to 312
	200	188 to 212
	100	88 to 112
150	150	144 to 156
30	30	28.8 to 31.2
15	15	14.4 to 15.6
3	3	2.88 to 3.12

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.6 to 10.4
R X 100	1 k	960 to 1040

HM-102S (SOLTEC) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.25, 2.5, 10, 50, 250, 500, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 50 μA, 0.5, 5, 50, 500 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 500, 1000 V
	Accuracy: ±5% FS
Resistance	Ranges: 20, 200, 20 k, 200 kΩ
	Accuracy: ±3° of arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575
0.25	0.25	0.2425 to 0.2575

DC CURRENT CALIBRATION:

Range	Applied	Limits
500 mA	500 mA	485 to 515 mA
50 mA	50 mA	48.5 to 51.5 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION: (Cont.)

Range	Applied	Limits
5 mA	5 mA	4.85 to 5.15 mA
0.5 mA	0.5 mA	0.485 to 0.515 mA
50 µA	50 µA	48.5 to 51.5 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
500	500	475 to 525
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.375 to 2.625

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	20	14 to 32
R X 10	200	140 to 320
R X 1 k	20 k	14 k to 32 k
R X 10 k	200 k	140 k to 320 k

IS-189 (SIMPSON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 150 µA, 0 to 50 µA 0 to 1, 10, 100, 500 mA 0 to 10 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 100 0 to 20000 Ω R X 10,000 0 to 20 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000 *	1850	1700 to 2000
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

* Connect High Voltage Lead to TI 5000 VDC jack

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
10 mA	10 mA	9.7 to 10.3 mA
1 mA	1 mA	0.97 to 1.03 mA
150 µA	150 µA	145.5 to 154.5 µA
100 µA *	100 µA	97 to 103 µA
50 µA	50 µA	48.5 to 51.5 µA

* For Basic 260 Models

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000 *	1000	750 to 1250
1000	1000	950 to 1050
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.375 to 2.625

* Use High Voltage Probe

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.8 to 11.2
R X 100	1 k	880 to 1120
R X 10 k	100 k	88 k to 112 k

I-166 (TRIPLETT) VOLT-OHMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 5, 15, 150, 500, 1500 V
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 1.5, 5, 15, 30, 50, 150, 500 V
	Accuracy: ±2% FS
Resistance	Ranges: R X 1 0 to 1,000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100kΩ R X 1000 0 to 1 MΩ
	Accuracy: ±2% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1500	1500	1470 to 1530
1500	1000	970 to 1030
500	500	490 to 510
150	150	147 to 153
	100	97 to 103
	50	47 to 53
	25	22 to 28
15	15	14.7 to 15.3
5	5	4.9 to 5.1

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
500	500	490 to 510
	400	390 to 410
	300	290 to 310
	200	190 to 210

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
500	100	90 to 110
150	150	147 to 153
50	50	49 to 51
30	30	29.4 to 30.6
15	15	14.7 to 15.3
5	5	4.9 to 5.1
1.5	1.5	1.470 to 1.53

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	100	100 ±2% of linear scale length
R X 10	1000	1000 ±2% of linear scale length
R X 100	10,000	10,000 ±2% of linear scale length
R X 1000	100,000	100,000 ±2% of linear scale length

I-167A (WESTON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000 V Accuracy: ±2% FS, 2.5 to 250 V Ranges ±3% FS, 1000 V Range
DC Current	Ranges: 0 to 100 μA 0 to 1, 10, 50, 250 mA 0 to 1, 10 A Accuracy: ±2% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000 V Accuracy: ±3% FS, 2.5 to 250 V Ranges ±4% FS, 1000 V Range
Resistance	Ranges: R X 1 0 to 3000 Ω R X 10 0 to 30000 Ω R X 100 0 to 300000 Ω R X 1000 0 to 3 MΩ R X 10000 0 to 30 MΩ Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
250	250	245 to 255
	200	195 to 205
	150	145 to 155
	100	95 to 105
	50	45 to 55
50	50	49 to 51
10	10	9.8 to 10.2
2.5	2.5	2.45 to 2.55

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.8 to 10.2 A
1 A	1 A	0.98 to 1.02 A
250 mA	250 mA	245 to 255 mA
50 mA	50 mA	49 to 51 mA
10 mA	10 mA	9.8 to 10.2 mA
1 mA	1 mA	0.98 to 1.02 mA
100 µA	100 µA	98 to 102 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
250	250	242.5 to 257.5
	200	192.5 to 207.5
	150	142.5 to 157.5
	100	92.5 to 107.5
	50	42.5 to 57.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
2.5	2.5	2.425 to 2.575

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 10	100	95 to 105
R X 100	1 k	950 to 1050
R X 1 k	10 k	9.5 k to 10.5 k
R X 10 k	100 k	95 k to 105 k

I-176 (WESTON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 5, 25, 100, 250, 1000, 5000 V Accuracy: ±4% FS, 5 to 1000 V Ranges ±5% FS, 5000 V Range
DC Current	Ranges: 0 to 50 μA 0 to 1, 10, 100, 500 mA 0 to 1, 5 A Accuracy: ±4% FS
AC Volts	Ranges: 0 to 5, 25, 100, 250, 1000 V Accuracy: ±5% FS
AC Current	Ranges: 0 to 0.5, 1, 5, 10 A Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 100 0 to 100,000 Ω R X 10,000 0 to 10 MΩ Accuracy: ±5% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION: (1000 Ω/V)

Range (V)	Applied (V)	Limits (V)
5000 *	1750	1500 to 2000
1000	1000	960 to 1040
250	250	240 to 260
100	100	96 to 104
25	25	24 to 26
	20	19 to 21
	15	14 to 16
	10	9 to 11

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (1000 Ω/V) (Cont.)

Range (V)	Applied (V)	Limits (V)
25	5	4 to 6
5	5	4.8 to 5.2

* Use high-voltage multiplier leads

DC VOLTS CALIBRATION: (20,000 Ω/V)

NOTE

The same procedure is followed and equivalent accuracy should be obtained in DC Voltage Calibration if the function selector switch of TI is in either volts position (1000 Ω/V or 20,000 Ω/V).

DC CURRENT CALIBRATION:

Range	Applied	Limits
5 A	5 A	4.8 to 5.2 A
1 A	1 A	0.96 to 1.04 A
500 mA	500 mA	480 to 520 mA
100 mA	100 mA	96 to 104 mA
10 mA	10 mA	9.6 to 10.4 mA
1 mA	1 mA	0.96 to 1.04 mA
50 µA	50 µA	48 to 52 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
250	250	237.5 to 262.5
100	100	95 to 105
25	25	23.75 to 26.25
	20	18.75 to 21.25
	15	13.75 to 16.25
	10	8.75 to 11.25
	5	3.75 to 6.25
5	5	4.75 to 5.25

CALIBRATION PERFORMANCE TABLE (Cont.)

AC CURRENT CALIBRATION:

Range (A)	Applied (A)	Limits (A)
10	10	9.5 to 10.5
5	5	4.75 to 5.25
1	1	0.95 to 1.05
0.5	0.5	0.475 to 0.525

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits
R X 1	10	10 ±5% of linear scale length
R X 100	1000	1000 ±5% of linear scale length
R X 10000	100 k	100 k ±5% of linear scale length

IM5284 (HEATH KIT) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1, 10, 100, 1000 V
	Accuracy: ±3% of FS
AC Volts	Ranges: 0 to 1, 10, 100, 1000 V
	Accuracy: ±5% of FS
DC Current	Ranges: 0 to 1, 10, 100, 1000 V
	Accuracy: ±4% of FS
Resistance	Ranges: R X 1, R X 100, R X 10 k, R X M; 10 Ω center scale
	Accuracy: ±3% of arc (8.4 to 11.6 Ω)

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (VDC)	Applied (VDC)	Limits (VDC)
1000	900	870 to 930
100	90	87 to 93
10	9	8.7 to 9.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
1	0.9	0.87 to 0.93

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	900	850 to 950
100	90	85 to 95
10	9	8.5 to 9.5
	8	7.5 to 8.5

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
10	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
1	0.9	0.85 to 0.95

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
1000	900	860 to 940
100	90	86 to 94
10	9	8.6 to 9.4
1	0.9	0.86 to 0.94

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
R X 1	10	8.4 to 11.6
R X 100	1000	840 to 1160
R X 10 k	100 k	84 k to 116 k
R X M	10 M	8.4 M to 11.6 M

KS14510L1 (WESTERN ELECTRIC) MULTIMETER

Characteristics	TI Performance Specifications
DC Volts	Ranges: 0.3, 3, 12, 60, 30, 300 and 600 V
	Accuracy: ±2% FS
DC Current	Ranges: 60 μA, 1.2 mA, 12 mA and 120 mA
	Accuracy: ±2% FS
AC Volts	Ranges: 3, 12, 60, 300 and 600 V
	Accuracy: 3, 60, 300 and 600 V ±5% FS
	Accuracy: 12 V Range ±5% FS from 3 to 12 V
Resistance	Ranges: R X 1 0 to 5 kΩ R X 10 0 to 50 kΩ R X 100 0 to 500 kΩ R X 1 k 0 to 5 MΩ R X 10 k 0 to 50 MΩ
	Accuracy: ±2% FS angular deflection at midscale

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (VDC)	Applied (VDC)	Limits (VDC)
600	600	588 to 612
300	300	294 to 306
60	60	58.8 to 61.2
12	12	11.76 to 12.24
3	3	2.94 to 3.06
	2	1.94 to 2.06
	1	0.94 to 1.06
0.3	0.3	0.294 to 0.306

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
120 mA	120 mA	117.6 to 122.4 mA
12 mA	12 mA	11.76 to 12.24 mA
1.2 mA	1.2 mA	1.176 to 1.224 mA
60 µA	60 µA	58.8 to 61.2 µA

AC VOLTS CALIBRATION:

Range (VAC)	Applied (VAC)	Limits (VAC)
600	600	570 to 630
300	300	285 to 315
60	60	57 to 63
12	12	11.4 to 12.6
3	3	2.85 to 3.15

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits
R X 1	20	±2% FS angular deflection midscale
R X 10	200	±2% FS angular deflection midscale
R X 100	2 k	±2% FS angular deflection midscale
R X 1 k	20 k	±2% FS angular deflection midscale
R X 10 k	200 k	±2% FS angular deflection midscale

LEM 75 (LEADER ELECTRONICS) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: ±0 to 0.3/1000 V; 8 ranges
	Accuracy: ±3% FS
AC Volts	Ranges: ±0 to 0.3/1000 V; 8 ranges
	Accuracy: ±4% FS
DC Milliamps	Ranges: 0 to 0.03/300 mA; 8 ranges
	Accuracy: ±3% FS
AC Milliamps	Ranges: 0 to 0.03/300 mA
	Accuracy: ±4% FS
Resistance	Ranges: 0 to 0.2/500 MΩ
	Accuracy: ±3% FS
Frequency Response	Ranges: 0.3 V @ 25 Hz to 1 MHz, ±0.5 dB; 3 V @ 30 Hz to 3 MHz, ±1 dB

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

TI Range	Applied (V)	Limits (V)
±1000	±1000	±970 to ±1030
±300	±300	±291 to ±309
±100	±100	±97 to ±103
±30	±30	±29.1 to ±30.9
±10	±10	±9.7 to ±10.3
	±8	±7.7 to ±8.3
	±6	±5.7 to ±6.3
	±4	±3.7 to ±4.3
	±2	±1.7 to ±2.3
±3	±3	±2.91 to ±3.09
±1	±1	±0.97 to ±1.03
±0.3	±0.3	±0.291 to ±0.309

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
300 mA	300 mA	291 mA to 309 mA
100 mA	100 mA	97 mA to 103 mA
30 mA	30 mA	29.1 mA to 30.9 mA
10 mA	10 mA	9.7 mA to 10.3 mA
3 mA	3 mA	2.91 mA to 3.09 mA
1 mA	1 mA	0.97 mA to 1.03 mA
300 µA	300 µA	291 µ A to 309 µA
30 µA	30 µA	29.1 µA to 30.9 µA

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
1000	1000	960 to 1040
300	300	288 to 312
100	100	96 to 104
30	30	28.8 to 31.2
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
3	3	2.88 to 3.12
1	1	0.96 to 1.04
0.3	0.3	0.288 to 0.312

AC CURRENT CALIBRATION:

Range	Applied	Limits
300 mA	300 mA	288 mA to 312 mA
100 mA	100 mA	96 mA to 104 mA
30 mA	30 mA	28.8 mA to 31.2 mA
10 mA	10 mA	9.6 mA to 10.4 mA
3 mA	3 mA	2.88 mA to 3.12 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

AC CURRENT CALIBRATION: (Cont.)

Range	Applied	Limits
1 mA	1 mA	0.96 mA to 1.04 mA
300 µA	300 µA	288 µA to 312 µA
30 µA	30 µA	28.8 µA to 31.2 µA

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.5 to 11.5
R X 10	100	85 to 115
R X 100	1 k	850 to 1150
R X 1 k	10 k	8.5 k to 11.5 k
R X 10 k	100 k	85 k to 115 k
R X 100 k	1 M	0.85 M to 1.15 M
R X 1 M	10 M	8.5 M to 11.5 M

FREQUENCY RESPONSE CALIBRATION:

Range	Applied	Limits (V)
0.3	0.28 V @ 25 Hz to 1 MHz	0.264 to 0.297
3	2.6 V @ 30 Hz to 3 MHz	2.32 to 2.91

ME-185/USM-123 (ELECTRO-MECHANICAL CORP) VOLT, OHM, MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.6, 8, 40, 160, 400, 1600, 4000 V Accuracy: ±3% FS
DC Current	Ranges: 0 to 16, 160 µA 0 to 1.6, 16, 160 mA 0 to 1.6, 16 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 8, 40, 160, 800 V Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 100 0 to 22,000 Ω R X 1 k 0 to 2 MΩ R X 10 k 0 to 20 MΩ R X 100 k 0 to 200 MΩ Accuracy: ±3% of ohmmeter total arc length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
4000	1880	1760 to 2000
1600	1600	1552 to 1648
1600	1000	952 to 1048
400	400	388 to 412
160	160	155.2 to 164.8
40	40	38.8 to 41.2
8	8	7.76 to 8.24
1.6	1.6	1.552 to 1.648
	1.2	1.152 to 1.248
	0.8	0.752 to 0.848
	0.4	0.352 to 0.448

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
16 A	16 A	15.52 to 16.48 A
1.6 A	1.6 A	1.552 to 1.648 A
160 mA	160 mA	155.2 to 164.8 mA
16 mA	16 mA	15.52 to 16.48 mA
1.6 mA	1.6 mA	1.552 to 1.648 mA
160 µA	160 µA	155.2 to 164.8 µA
16 µA	16 µA	15.52 to 16.48 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
800	800	760 to 840
160	160	152 to 168
40	40	38 to 42
8	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
3	3	2.85 to 3.15

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.4 to 10.6
R X 10	100	94 to 106
R X 100	1 k	940 to 1060
R X 1 k	10 k	9.4 k to 10.6 k
R X 10 k	100 k	94 k to 106 k
R X 100 k	1 M	940 k to 1.06 M

ME-25 A/U (HICKOK) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1, 2.5, 10, 25, 100, 250, 1000, 5000 V Accuracy: ±4% FS, 1 to 100 V Ranges ±5% FS, 250 to 5000 V Ranges
DC Current	Ranges: 0 to 1, 2.5, 10, 25, 100, 250, 1000 mA Accuracy: ±3% FS
AC Volts	Ranges: 0 to 1, 2.5, 10, 25, 100, 250, 1000 V; rms or p-p Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 1 MΩ R X 100 0 to10 MΩ R X 1 k 0 to 1000 MΩ R X 10 k 0 to 10 GΩ R X 1 M 0 to 1 teraohm Accuracy: ±3° of linear arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1750	1500 to 2000
5000	1000	750 to 1250
1000	1000	950 to 1050
250	250	237.5 to 262.5
100	100	96 to 104
25	25	24 to 26
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
10	2	1.6 to 2.4
2.5	2.5	2.4 to 2.6
1	1	0.96 to 1.04

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
1000	1000	970 to 1030
250	250	242.5 to 257.5
100	100	97 to 103
25	25	24.25 to 25.75
10	10	9.7 to 10.3
2.5	2.5	2.425 to 2.575
1	1	0.97 to 1.03

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
250	250	237.5 to 262.5
100	100	95 to 105
25	25	23.75 to 26.25
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.375 to 2.625
1	1	0.95 to 1.05
Range (V)	Applied (V)	Limits (V)
1000	1000 P-P	335.9 to 371.2 rms
		950 to 1050 p-p

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	10 Ω ±3° of arc length
R X 10	100	100 Ω ±3° of arc length
R X 100	1000	1000 Ω ±3° of arc length
R X 1 k	10,000	10 kΩ ±3° of arc length
R X 10 k	100,000	100 kΩ ±3° of arc length
R X 1 M	10,000,000	10 MΩ ±3° of arc length

ME-29/U (GENERAL ELECTRIC) AMMETER

TI Characteristics	Performance Specifications
DC Current	Ranges: 0 to 1, 5, 10, 50, 100, 500 mA
	Accuracy: ±5% FS

CALIBRATION PERFORMANCE TABLE

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
500	500	475 to 525
100	100	95 to 105
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
5	5	4.75 to 5.25
1	1	0.95 to 1.05

MM-1 (HEATH) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.5, 5, 50, 150, 500, 1500, 5000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 150 μA 0 to 15, 150 mA 0 to 0.5, 15 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 1.5, 5, 50, 150, 500, 1500, 5000 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 10 0 to 20,000 Ω R X 10 K 0 to 20 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1850	1700 to 2000
1500	1500	1455 to 1545
1500	1000	955 to 1045
500	500	485 to 515
150	150	145.5 to 154.5
50	50	48.5 to 51.5
5	5	4.85 to 5.15
	4	3.85 to 4.15
	3	2.85 to 3.15
	2	1.85 to 2.15
	1	0.85 to 1.15
1.5	1.5	1.455 to 1.545

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
15 A	15 A	14.55 to 15.45 A
0.5 A	0.5 A	0.485 to 0.515 A
150 mA	150 mA	145.5 to 154.5 mA
15 mA	15 mA	14.55 to 15.45 mA
150 µA	150 µA	145.5 to 154.5 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	750 to 1250
1500	1400	1325 to 1475
500	500	475 to 525
150	150	142.5 to 157.5
50	50	47.5 to 52.5
5	5	4.75 to 5.25
	4	3.75 to 4.25
	3	2.75 to 3.25
	2	1.75 to 2.25
	1	0.75 to 1.25
1.5	1.5	1.425 to 1.575

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 10	100	95 to 105
R X 10 k	100 k	95 to 105

M110 (UNIVERSAL ENTERPRISE) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 12, 60, 300, 1200 V (1 to 12,000 V with optional probe)
	Accuracy: ±3% of FS
AC Volts	Ranges: 0 to 6, 30, 60, 300, 600 V
	Accuracy: ±4% of FS
DC Millivolts	Ranges: 0 to 60, 300, 1200 mV
	Accuracy: ±3% of FS
DC Milliamps	Ranges: 0 to 60, 600 mA
	Accuracy: ±3% of FS
DC Microamps	Ranges: 0 to 30, 60 µA
	Accuracy: ±3% of FS
Resistance	Ranges: 0 to 200 Ω, 2 k, 20 k, 2 M
	Accuracy: ±3% of arc (4.5 to 5.75) 5 Ω center scale

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (VDC)	Applied (VDC)	Limits (VDC)
12,000 (with optional probe)	12,000	11640 to 12360
1200	1200	1164 to 1236
1200	1000	964 to 1036
300	300	291 to 309
60	60	58.2 to 61.8
12	12	11.64 to 12.36
3	3	2.91 to 3.09
	2	1.91 to 2.09
	1	0.91 to 1.09

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (VAC)	Applied (VAC)	Limits (VAC)
600 V	600	576 to 624
300 V	300	288 to 312
60	60	57.6 to 62.4
30	30	28.8 to 31.2
6	6	5.76 to 6.24
	4	3.76 to 4.24
	2	1.76 to 2.24

DC MILLIVOLT CALIBRATION:

Range (mV)	Applied (mV)	Limits (mV)
1200	1200	1164 to 1236
300	300	291 to 309
60	60	58.2 to 61.8
	40	38.2 to 41.8
	20	18.2 to 21.8

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
600	600	582 to 618
60	60	58.2 to 61.8
	40	38.2 to 41.8
	20	18.2 to 21.8

DC CURRENT CALIBRATION:

Range (µA)	Applied (µA)	Limits (µA)
60	60	58.2 to 61.8
30	30	29.1 to 30.9

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
X 1	200	194 to 206
X 10	2 k	1.94 to 2.06 k
X 100	20 k	19.4 to 20.6 k
X 10 k	2 M	1.94 to 2.06 M

M20 UNIVERSAL ENTERPRISES

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 10, 50, 250, 500 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 250 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 50, 250, 500 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 5 k, center 50 Ω R X 10 0 to 50 k, center 500 Ω R X 100 0 to 500 k, center 5 kΩ
	Accuracy: ±3% of scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
	40	38.5 to 41.5
	20	18.5 to 21.5
10	10	9.7 to 10.3

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
250	250	242.5 to 257.5
	150	142.5 to 157.5
	50	42.5 to 57.5

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
500	500	480 to 520
250	250	240 to 260
50	50	48 to 52
	40	38 to 42
	20	18 to 22
10	10	9.6 to 10.4

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	50	44 to 55
R X 10	500	440 to 550
R X 100	5000	4,400 to 5,500

M75 MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 5, 10, 250, 1000
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 50 µA; 0 to 25, 250 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 50, 250, 500, 1000 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 500 Ω R X 10 0 to 5 kΩ R X 100 0 to 50 kΩ
	Accuracy: +3% of scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied	Limits
1000 V	1000 V	970 to 1030 V
250 V	250 V	242.5 to 257.5 V
50 V	50 V	48.5 to 51.5 V
10 V	10 V	9.7 to 10.3 V
2.5 V	2.5 V	2.425 to 2.575 V
250 mV	250 mV	242.5 to 257.5 mV
	175 mV	167.5 to 182.5 mV

DC CURRENT CALIBRATION:

Range	Applied	Limits
250 mA	250 mA	242.5 to 257.5 mA
25 mA	25 mA	24.25 to 25.75 mA
50 µA	50 µA	48.5 to 51.5 µA

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range	Applied	Limits
1000 V	1000 V	960 to 1040 V
500 V	500 V	480 to 520 V
250 V	250 V	240 to 260 V
	175 V	165 to 185 V
50 V	50 V	48 to 52 V
10 V	10 V	9.6 to 10.4 V

RESISTANCE CALIBRATION:

Range	Applied	Limits
R X 1	50	44 to 55 Ω
R X 10	500	440 to 550 Ω
R X 100	5000	4400 to 5500 Ω

P-2_B MULTITESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 10, 50, 250, 500, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 0.5, 10, 250 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 50, 250, 500, 1000 V
	Accuracy: ±4% FS
Resistance	Ranges: 0 to 5,000 Ω
	Midscale 50 Ω; 0 to 500 kΩ, Midscale 5 kΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
250	250	242.5 to 257.5
10	10	9.7 to 10.3
0.5	0.5	0.485 to 0.515

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
500	500	480 to 520
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
5 kΩ	50	49.5 to 50.5
500 kΩ	5000	4950 to 5050

PM-32 (WESTINGHOUSE) TESTER UNIT

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.5, 7.5, 15, 150, 750 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 1.5, 15, 150 mA
	Accuracy: ±3%
AC Volts	Ranges: 0 to 1.5, 7.5, 15, 150, 750 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 100 0 to 100 kΩ R X 1000 0 to 1 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
750	750	727.5 to 772.5
150	150	145.5 to 154.5
15	15	14.55 to 15.45
7.5	7.5	7.275 to 7.725
1.5	1.5	1.455 to 1.545
	1	0.955 to 1.045
	0.5	0.455 to 0.545

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
150	150	145.5 to 154.5
15	15	14.55 to 15.45
1.5	1.5	1.455 to 1.545

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
750	750	712.5 to 787.5
150	150	142.5 to 157.5
15	15	14.25 to 15.75
7.5	7.5	7.125 to 7.875
1.5	1.5	1.425 to 1.575
	1	0.925 to 1.075
	0.5	0.425 to 0.575

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 100	1 k	950 to 1050
R X 1 k	10 k	9.5 k to 10.5 k

PM-7 (BRUNO) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 250 mV 0 to 2.5, 10, 50, 250, 1000, 5000 V Accuracy: ±3% of FS, 2.5 mV to 1000 V Ranges ±5% FS, 5000 V Range
DC Current	Ranges: 0 to 50 µA 0 to 1, 10, 100, 500 mA 0 to 10 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V Accuracy: ±4% FS, 2.5 to 1000 V Ranges ±5% FS, 5000 V Range
Resistance	Ranges: R X 1 0 to 2000 Ω R X 100 0 to 200 kΩ R X 10,000 0 to 20 MΩ Accuracy: ±3% of linear scale length

WARNING

Extreme care must be exercised when working in high voltage circuits. Neither the meter nor the Test Leads should be touched by the user when power is applied to the circuit under test. Voltages hazardous to personnel may be encountered during the sequence of these test procedures. All necessary precautions during the conduct of these tests must be observed.

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied	Limits
5000 V	1750 V	1500 to 2000 V
5000 V	1000 V	750 to 1250 V
1000 V	1000 V	970 to 1030 V
250 V	250 V	242.5 to 257.5 V
50 V	50 V	48.5 to 51.5 V

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range	Applied	Limits
10 V	10 V	9.7 to 10.3 V
	8 V	7.7 to 8.3 V
	6 V	5.7 to 6.3 V
	4 V	3.7 to 4.3 V
	2 V	1.7 to 2.3 V
2.5 V	2.5 V	2.425 to 2.575 V
250 mV	250 mV	242.5 to 257.5 mV

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
10 mA	10 mA	9.7 to 10.3 mA
1 mA	1 mA	0.97 to 1.03 mA
50 µA	50 µA	48.5 to 51.5 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	750 to 1250
1000	1000	960 to 1040
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
2.5	2.5	2.4 to 2.6

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.6 to 11.5
R X 100	1 k	860 to 1150
R X 10 k	100 k	86 to 115 k

OVERLOAD PROTECTION CALIBRATION: (PM-7A only)

Set TI FUNCTION switch to + DC and RANGE switch to R X 10,000. Touch the red test lead to the +250 mV/50 µA jack. The TI Reset button should pop out, if the Reset button does not pop out replace the 15 V battery.

Set function switch to + DC and range switch to 2.5 V. Set Meter Calibrator for 15 V. Connect TI test leads to Meter Calibrator output terminals, observing proper polarity. The TI reset button should pop out and meter indication should drop to zero.

RTS-E-518 (YOKOGAWY ELECTRIC) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 25, 100, 500, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 0.1, 1, 5, 25, 100, 500 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 25, 100, 500, 1000 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100,000 Ω R X 1000 0 to 1 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
500	500	485 to 515
100	100	97 to 103
25	25	24.25 to 25.75
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
500	500	485 to 515
100	100	97 to 103

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION: (Cont.)

Range (mA)	Applied (mA)	Limits (mA)
25	25	24.25 to 25.75
5	5	4.85 to 5.15
1	1	0.97 to 1.03
0.1	0.1	0.097 to 0.103

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
500	500	480 to 520
100	100	96 to 104
25	25	24 to 26
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
2.5	2.5	2.4 to 2.6

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 10	100	95 to 105
R X 100	1 k	950 to 1050
R X 1 k	10 k	9.5 k to 10.5 k

SD-1 CIRCUIT ANALYZER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 6, 30, 150, 600, 1500 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 0.3, 3, 30, 300 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 6, 30, 150, 600, 1500 V
	Accuracy: ±5% FS
Resistance	Ranges: 0 to Infinity (4 ranges)
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1500	1500	1455 to 1545
1500	1000	955 to 1045
600	600	582 to 618
150	150	145.5 to 154.5
30	30	29.1 to 30.9
	25	24.1 to 25.9
	20	19.1 to 20.9
	15	14.1 to 15.9
	10	9.1 to 10.9
6	6	5.82 to 6.18

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
300	300	291 to 309
30	30	29.1 to 30.9
3	3	2.91 to 3.09
0.3	0.3	0.291 to 0.309

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1500	1000	925 to 1075
600	600	570 to 630
150	150	142.5 to 157.5
30	30	28.5 to 31.5
	25	23.5 to 26.5
	20	18.5 to 21.5
	15	13.5 to 16.5
	10	8.5 to 11.5
6	6	5.7 to 6.3

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R divided by 10	10	8.7 to 11.5
R X 1	100	87 to 115
R X 10	1 k	870 to 1150
R X 100	10 k	8.7 k to 11.5 k

SK60 (KAISE) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.25, 2.5, 10, 50, 250, 500, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 25 µA, 5, 50, 500 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 50, 250, 500, 1000 V
	Accuracy: ±4%
Resistance	Ranges: R X 1, R X 10, R X 100, R X 1 k
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575
0.25	0.25	0.2425 to 0.2575

DC CURRENT CALIBRATION:

Range	Applied	Limits
25 µA	25 µA	24.25 to 25.75 µA
5 mA	5 mA	4.85 to 5.15 mA
50 mA	50 mA	48.5 to 51.5 mA
500 mA	500 mA	485 to 515 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
500	500	480 to 520
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	±3% of linear scale length
R X 10	100	±3% of linear scale length
R X 100	1000	±3% of linear scale length
R X 1000	10 k	±3% of linear scale length

SP 140 MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 0.05, 25, 250 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 50, 250, 500, 1000 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 4 kΩ R X 10 0 to 40 kΩ
	Accuracy: ±3% of arc length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
250	250	242.5 to 257.5
	175	167.5 to 182.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
2.5	2.5	2.425 to 2.575

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
250	250	242.5 to 257.5
25	25	24.25 to 25.75
0.05	0.05	0.0485 to 0.0515

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
500	500	480 to 520
250	250	240 to 260
	175	165 to 185
50	50	48 to 52
10	10	9.6 to 10.4

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	40	40 ±3% of arc length
R X 10	400	400 ±3% of arc length

TA341 (TELE-SIGNAL) CURRENT METER TEST SET

TI Characteristics	Performance Specifications
DC Current	Ranges: 0 to ±100 mA
	Accuracy: ±2% FS

CALIBRATION PERFORMANCE TABLE

DC CURRENT CALIBRATION:

Range	Applied (mA)	Limits (mA)
0 to ±100 mA	100	96 to 104
	80	76 to 84
	60	56 to 64
	40	36 to 44
	20	16 to 24
	-100	-96 to -104
	-80	-76 to -84
	-60	-56 to -64
	-40	-36 to -44
	-20	-16 to -24

TE-60 (LAFAYETTE) MULTITESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.25, 1, 2.5, 10, 25, 100, 250, 500, 1,000 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 0.05, 5, 50, 500 mA 0 to 12 A
	Accuracy: ±2% FS, 0.05 to 500 mA Ranges ±4% FS, 12 A Range
AC Volts	Ranges: 0 to 2.5, 10, 25, 100, 250, 500, 1000 V
	Accuracy: ±4% of FS
Resistance	Ranges: R X 10 0 to 60 kΩ R X 1 k 0 to 6 MΩ R X 10 k 0 to 60 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (DCV)	Applied (V)	Limits (V)
1000 *	1000	980 to 1020
500 & up	500	490 to 510
250	250	245 to 255
100	100	98 to 102
25	25	24.5 to 25.5
10	10	9.8 to 10.2
	8	7.8 to 8.2
	6	5.8 to 6.2
	4	3.8 to 4.2
	2	1.8 to 2.2
2.5	2.5	2.45 to 2.55
1	1	0.98 to 1.02
0.25	0.25	0.245 to 0.255

* The TI DC1kV jack and 500 & UP-DCV range

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
12 A	12 A	11.52 to 12.48 A
500 mA	500 mA	490 to 510 mA
50 mA	50 mA	49 to 51 mA
5 mA	5 mA	4.9 to 5.1 mA
0.05 mA	0.05 mA	0.049 to 0.051 mA

AC VOLTS CALIBRATION:

Range (VAC)	Applied (V)	Limits (V)
1000 *	1000	960 to 1040
500 & UP	500	480 to 520
250	250	240 to 260
100	100	96 to 104
25	25	24 to 26
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
2.5	2.5	2.4 to 2.6

* The TI AC1kV jack and 500 & UP ACV range

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 10	100	95 to 105
R X 1 k	10 k	9.5 k to 10.5 k
R X 10 k	100 k	95 k to 105 k

TS-297 ( )/U MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 4, 10, 40, 100, 400, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 4, 40, 100, 400 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 4, 10, 40, 100, 400, 1000 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000Ω R X 100 0 to 100,000Ω
	Accuracy: ±0.6 of 1 scale division of center indication on black DC scale

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
400	400	388 to 412
100	100	97 to 103
40	40	38.8 to 41.2
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
4	4	3.88 to 4.12

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
400	400	388 to 412
100	100	97 to 103
40	40	38.8 to 41.2
4	4	3.88 to 4.12

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
400	400	380 to 420
100	100	95 to 105
40	40	38 to 42
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
4	4	3.8 to 4.2

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9 to 11
R X 10	100	90 to 110
R X 100	1 k	900 to 1100

TS-352 ( )/U (PHAOSTROM CO.) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 500, 1000 V (1000 Ω/V) 0 to 2.5, 10, 50, 250, 500, 1000, 5000 V (20,000 Ω/V) Accuracy: ±3% FS, 1000 Ω/V, 2.5 to 1000 V Ranges ±3% FS, 20,000 Ω/V, 2.5 to 500 V Ranges ±4% FS, 20,000 Ω/V, 1000 V Range ±6% FS, 20,000 Ω/V, 5000 V Range
DC Current	Ranges: 0 to 250 µA 0 to 2.5, 10, 50, 100, 500 mA 0 to 2.5, 10 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 500, 1000 V Accuracy: ±4% FS, 2.5 to 500 V Ranges ±5% FS, 1000 V Range
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100 kΩ R X 1,000 0 to 1 MΩ R X 10,000 0 to 10 MΩ Accuracy: ±3% of linear scale

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1 kΩ/V		
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
1 KΩ/V (Cont.)		
10	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575
20 kΩ/V		
5000 *	4500	4200 to 4800
1000	1000	960 to 1040
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

* Connect 8 inch jumper lead between the low potential jack of MX-815/U and 2.5 V jack (left hand side of meter). Connect heavy black lead to 5000 V jack on MX-815/U.

DC CURRENT CALIBBATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
2.5 A	2.5 A	2.425 to 2.575 A
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
50 mA	50 mA	48.5 to 51.5 mA
10 mA	10 mA	9.7 to 10.3 mA
2.5 mA	2.5 mA	2.425 to 2.575 mA
250 µA	250 µA	242.5 to 257.5 µA

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
500	500	480 to 520
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
2.5	2.5	2.4 to 2.6

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.7 to 11.2
R X 10	100	87 to 112
R X 100	1 k	870 to 1120
R X 1 k	10 k	8.7 to 11.2 k
R X 10 k	100 k	87 k to 112 k

U50 (SANWA ELECTRIC INSTRUMENT CO) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.1, 0.5, 5, 50, 250, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 50 µA 0 to 0.5, 5, 50, 250 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000 V
	Accuracy: ±4% FS

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
	40	38.5 to 41.5
	30	28.5 to 31.5
	20	18.5 to 21.5
	10	8.5 to 11.5
5	5	4.85 to 5.15
0.5	0.5	0.485 to 0.515
0.1	0.1	0.097 to 0.103

DC CURRENT CALIBRATION:

Range	Applied	Limits
250	250 mA	242.5 to 257.5 mA
50	50 mA	48.5 to 51.5 mA
5	5 mA	4.85 to 5.15 mA
0.5	0.5 mA	0.485 to 0.515 mA
50 µA	50 µA	48.5 to 51.5 µA

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
1000	1000	960 to 1040
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
2.5	2.5	2.4 to 2.6

WV518B (VIZ) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.25, 2.5, 10, 50, 250 and 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 0.05, 2.5, 25, 250 mA and 5 A
	Accuracy: ±3% FS, 0.05 to 250 mA; ±5% FS, 5 A
AC Volts	Ranges: 0 to 10, 50, 250 and 1000 V
	Accuracy: ±4% FS @ 60 Hz
AC Current	Ranges: 0 to 5 A
	Accuracy: ±5% FS @ 60 Hz
Resistance	Ranges: R X 1, R X 10, R X 100, R X 1 k
	Accuracy: ±3% of scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
0.25	0.25	0.2425 to 0.2575
2.5	2.5	2.425 to 2.575
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
50	50	48.5 to 51.5
250	250	242.5 to 257.5
1000	1000	970 to 1030

DC CURRENT CALIBRATION:

Range	Applied	Limits
0.05 mA	0.05 mA	0.0485 to 0.0515 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION: (Cont.)

Range	Applied	Limits
2.5 mA	2.5 mA	2.425 to 2.575 mA
25 mA	25 mA	24.25 to 25.75 mA
250 mA	250 mA	242.5 to 257.5 mA
5 A	5 A	4.75 to 5.25 A

AC VOLTS CALIBRATION:

Range	Applied (@ 60 Hz)	Limits (V)
10 V	10 V	9.6 to 10.4
	8 V	7.6 to 8.4
	6 V	5.6 to 6.4
	4 V	3.6 to 4.4
	2 V	1.6 to 2.4
50 V	50 V	48 to 52
250 V	250 V	240 to 260
1000 V	1000 V	960 to 1040

AC CURRENT CALIBRATION:

Range	Applied (@ 60 Hz)	Limits
5 A	5 A	4.75 to 5.25 A

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	20	20 ±3% of scale length
R X 10	200	200 ±3% of scale length
R X 100	2 k	2 k ±3% of scale length
R X 1 k	20 k	20 k ±3% of scale length

WV520B (VIZ) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to ±0.1, ±1, ±2.5, ±10, ±50, ± 250, ±500 and ±1000 V*
	Accuracy: ±3% FS
DC Current	Ranges: 0 to ±10 µA, ±100 µA, ±1 mA, ±10 mA, ±100 mA, ±500 mA and ±10 A*
	Accuracy: ±3% FS all ranges except 10 A range which is ±4% FS
AC Volts	Ranges: 0 to 10, 50, 250, 500 and 1000 V*
	Accuracy: ±3 FS @ 60 Hz
AC Current	Ranges: 0 to 10 A*
	Accuracy: ±4% FS
Resistance	Ranges: R X 1, R X 100, R X 1 k, R X 10 k
	Accuracy: ±3% of scale length
Frequency Response	Ranges: 3 V @ 30 Hz to 50 kHz
	Accuracy: ±1 dB (±12.6 %)

* Use special jacks

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
0.1	0.1	0.097 to 0.103
1	1	0.97 to 1.03
2.5	2.5	2.425 to 2.575
10	±10	±9.7 to ±10.3
	±8	±7.7 to ±8.3
	±6	±5.7 to ±6.3
	±4	±3.7 to ±4.3
50	50	48.5 to 51.5

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
250	250	242.5 to 257.5
500	500	485 to 515
1000 *	1000	970 to 1030

* Use special jacks

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 µA	10 µA	9.7 to 10.3 µA
100 µA	100 µA	97 to 103 µA
1 mA	1 mA	0.97 to 1.03 mA
10 mA	10 mA	9.7 to 10.3 mA
100 mA	±100 mA	±97 to ±103 mA
	±80 mA	±77 to ±83 mA
	±60 mA	±57 to ±63 mA
	±40 mA	±37 to ±43 mA
500 mA	500 mA	485 to 515 mA
10 A*	10 A	9.6 to 10.4 mA

* Use special jacks

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
50	50	48.5 to 51.5
250	250	242.5 to 257.5
500	500	485 to 515
1000 *	1000	970 to 1030

* Use special jacks

CALIBRATION PERFORMANCE TABLE (Cont.)

AC CURRENT CALIBRATION:

Range	Applied	Limits
10 A *	10 A	9.6 to 10.4 A
	8 A	7.6 to 8.4 A
	6 A	5.6 to 6.4 A
	4 A	3.6 to 4.4 A
	2 A	1.6 to 2.4 A

* Use special jacks

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	20	18 to 22.5
R X 100	2 k	1.8 to 2.25 k
R X 1 k	20 k	18 to 22.5 k
R X 10 k	200 k	180 to 225 k

FREQUENCY RESPONSE CALIBRATION:

Range	Applied (V)	Limits (V)
10 V	3 @ 30 Hz to 50 kHz	2.6 to 3.4

2WV547B, WV547C, (VIZ MFG CO.) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0.5, 2.5, 10, 150, 250, and 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0.05, 25 and 250 mA
	Accuracy: ±3% FS
AC Voltage	Ranges: 10, 50, 250, 500 and 1000 V
	Accuracy: ±4% FS, ±3% for MW547C
	Frequency Response: 10 Hz to 100 kHz
	Accuracy: ±1 dB
Resistance	Ranges: 2 Ω to 100 kΩ R X 1, R X 10 and RX 100
	Accuracy: ±3% of scale length

CALIBRATION PERFORMANCE TABLE

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)	Limits (V) WV547C
1000	900	860 to 940	870 to 930
500	470	450 to 490	455 to 485
250	240	230 to 250	232.5 to 247.5
50	50	48 to 52	48.5 to 51.5
	40	38 to 42	38.5 to 41.5
	30	28 to 32	28.5 to 31.5
	20	18 to 22	18.5 to 21.5
	10	8 to 12	8.5 to 11.5
10	10	9.6 to 10.4	9.7 to 10.3

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
R X 1	180	±3% scale length
R X 10	1800	±3% scale length
R X 100	18 k	±3% scale length

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	900	870 to 930
500	485	470 to 500
250	240	232.5 to 247.5
100	95	92 to 98
50	45	43.5 to 46.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
	1	0.7 to 1.3
2.5	2.4	2.325 to 2.475
0.5	0.45	0.435 to 0.465

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
250	240	232.5 to 247.5
25	24	23.25 to 24.75
0.05	0.045	0.0435 to 0.0465

WV591 (VIZ) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.12, 1.2, 3, 12, 30, 120, 300, 1200 V
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 6, 30, 120, 300, 1200 V
	Accuracy: ±3% FS
	Frequency Reponse: ±1 dB (6 V range, 30 Hz to 500 kHz)
DC Current	Ranges: 0 to 0.03, 3, 30, 300 mA, and 6 A (ext term)
	Accuracy: ±3% FS
Resistance	Ranges: R X 1, R X 100, R X 1 k, R X 10 k
	Accuracy: ±3% scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
0.12	0.10	0.0964 to 0.1036
1.2	1.0	0.964 to 1.036
3.0	3.0	2.91 to 3.09
12	10	9.64 to 10.36
12	8	7.64 to 8.36
	6	5.64 to 6.36
	4	3.64 to 4.36
	2	1.64 to 2.36
30	30	29.1 to 30.9
120	100	96.4 to 103.6
300	300	291.0 to 309.0
1200	1000	964.0 to 1036.0

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6	6 @ 60 Hz	5.82 to 6.18
30	30 @ 60 Hz	29.1 to 30.90
	20 @ 60 Hz	19.1 to 20.90
	10 @ 60 Hz	9.1 to 10.90
	5 @ 60 Hz	4.1 to 5.90
120	120 @ 60 Hz	116.4 to 123.6
300	300 @ 60 Hz	291.0 to 309.0
1200	1000 @ 60 Hz	964.0 to 1036.0
6	3 @ 30 Hz to 500 kHz	±1 dB

DC CURRRENT CALIBRATION:

Range	Applied	Limits
0.03 mA	0.03	0.0291 to 0.0309
3.0 mA	3	2.91 to 3.09
30 mA	30	29.1 to 30.9
	20	19.1 to 20.9
	10	9.1 to 10.9
	5	4.1 to 5.9
300 mA	300 mA	291.0 to 309.0
6A	6A	5.82 to 6.18

RESISTANCE CALIBRATION

Range (Ω)	Applied (Ω)	Limits (Ω)
R X 1	20	20 ±3% of scale length
R X 100	2 k	2 k ±3% of scale length
R X 1 k	20 k	20 k ±3% of scale length
R X 10 k	200 k	200 k ±3% of scale length

120M (PRECISION APPARATUS) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.2, 3, 12, 60, 300, 600, 1200, 6000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 60, 300 µA 0 to 1.2, 12, 120, 600 mA 0 to 12 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 1.2, 3, 12, 60, 300, 600, 1200, 6000 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1/10 0 to 200 Ω R X 1 0 to 2,000 Ω R X 100 0 to 20,000 Ω R X 1,000 0 to 2 MΩ R X 10,000 0 to 20 MΩ
	Accuracy: ±3% of linear scale length

NOTE

The TI is being derated from manufacturer's specifications due to age and nonreliability of the instrument.

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1820	1640 to 2000
1200	1200	1164 to 1236
1200	1000	964 to 1036
600	600	582 to 618
300	300	291 to 309
60	60	58.2 to 61.8
	50	48.2 to 51.8
	40	38.2 to 41.8
	30	28.2 to 31.8

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
60	20	18.2 to 21.8
	10	8.2 to 11.8
12	12	11.64 to 12.36
3	3	2.91 to 3.09
1.2	1.2	1.164 to 1.236

DC CURRENT CALIBRATION:

Range	Applied	Limits
12 A	12 A	11.64 to 12.36 A
600 mA	600 mA	582 to 618 mA
120 mA	120 mA	116.4 to 123.6 mA
12 mA	12 mA	11.64 to 12.36 mA
1.2 mA	1.2 mA	1.164 to 1.236 mA
300 µA	300 µA	291 to 309 µA
60 µA	60 µA	58.2 to 61.8 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1000	700 to 1300
1200	1000	940 to 1060
600	600	570 to 630
300	300	285 to 315
60	60	57 to 63
	50	47 to 53
	40	37 to 43
	30	27 to 33
	20	17 to 23
	10	7 to 13
12	12	11.4 to 12.6
3	3	2.85 to 3.15
1.2	1.2	1.14 to 1.26

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω), ±3% of linear scale length
R X 1/10	10	10
R X 1	20	20
R X 100	2,000	2,000
R X 1,000	20,000	20,000
R X 10,000	200,000	200,000

120P (B & K) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.25, 1, 2.5, 10, 250, 500, 1000 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 50 µA
	Accuracy: ±1.5% FS 1, 10, 100, 500 mA, 10 A ±2% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 500, 1000 V
	Accuracy: ±3% FS
Resistance	Ranges: R X 1 0 to 2 kΩ
	Accuracy: ±2.5° of arc
	Ranges: R X 100 0 to 200 kΩ R X 10,000 0 to 20 M
	Accuracy: ±2° of arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied	Limits
1000	1000	970 to 1020
500	500	490 to 510
250	250	245 to 255
50	50	49 to 51
10	10	9.8 to 10.2
	8	7.8 to 8.2
	6	5.8 to 6.2
	4	3.8 to 4.2
	2	1.8 to 2.2
2.5	2.5	2.45 to 2.55
1	1	0.98 to 1.02
0.25	0.25	0.245 to 0.255

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.8 A to 10.2 A
500 mA	500 mA	490 mA to 510 mA
100 mA	100 mA	98 mA to 102 mA
10 mA	10 mA	9.8 mA to 10.2 mA
1 mA	1 mA	0.98 mA to 1.02 mA
50 µA	50 µA	49 µA to 51 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 100	1 k	960 to 1040
R X 10 k	100 k	96 k to 104 k

134A (HICKOK) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 500, 1000 V Accuracy: ±3% FS
DC Current	Ranges: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 500 mA Accuracy: ±3% FS
AC Volts	Ranges: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 500, 1000 V Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100,000 Ω R X 1000 0 to 1 MΩ Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
100	100	97 to 103
50	50	48.5 to 51.5
25	25	24.25 to 25.75
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
5	5	4.85 to 5.15
2.5	2.5	2.425 to 2.575
1	1	0.97 to 1.03

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
500	500	485 to 515
250	250	242.5 to 257.5
100	100	97 to 103
50	50	48.5 to 51.5
25	25	24.25 to 25.75
10	10	9.7 to 10.3
5	5	4.85 to 5.15
2.5	2.5	2.425 to 2.575
1	1	0.97 to 1.03

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
500	500	480 to 520
250	250	240 to 260
100	100	96 to 104
50	50	48 to 52
25	25	24 to 26
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
5	5	4.8 to 5.2
2.5	2.5	2.4 to 2.6
1	1	0.96 to 1.04

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 10	100	95 to 105
R X 100	1 k	950 to 1050
R X 1 k	10 k	9.5 k to 10.5 k

165 (RCA) JUNIOR VOLTOHMST

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 10, 30, 100, 300, 1000 V
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 30, 100, 300, 1000 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100,000 Ω R X 1000 0 to 1 MΩ R X 10,000 0 to 10 MΩ R X 1M 0 to 1000 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
300	300	291 to 309
100	100	97 to 103
30	30	29.1 to 30.9
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
3	3	2.91 to 3.09

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
300	300	288 to 312
100	100	96 to 104

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION (Cont.)

Range (V)	Applied (V)	Limits (V)
30	30	28.8 to 31.2
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 10	100	95 to 105
R X 100	1 k	950 to 1050
R X 1 k	10 k	9.5 k to 10.5 k
R X 10 k	100 k	95 k to 105 k
R X 1 M	10 M	950 k to 1.05 M

165/165U VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 2.5, 10, 50, 250; and 1000 V on separate jacks
	Accuracy: ±3% of FS all ranges
DC Current	Ranges: 0.5, 5, 50 and 500 mA
	Accuracy: ±3% of FS all ranges
AC Volts	Ranges: 2.5, 10, 50, 250; and 1000 V on separate jacks
	Accuracy: ±4% of FS all ranges 100 kHz through 50 V; to 20 kHz on 250 V range; to 1 kHz on 1000 V range
Resistance	Ranges: R X 1 200 Ω center R X 10 2 kΩ center R X 100 20 kΩ center R X 1 k 200 kΩ center
	Accuracy: ±3° of arc all ranges

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	900	870 to 930
250	240	232.5 to 247.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
500	500	485 to 515
50	50	48.5 to 51.5
5	5	4.85 to 5.15
	4	3.85 to 4.15
	3	2.85 to 3.15
	2	1.85 to 2.15
	1	0.85 to 1.15
0.5	0.5	0.485 to 0.515

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	900	860 to 940
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
2.5	2.5	2.4 to 2.6

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	200	190 to 220
R X 10	2 k	1.9 to 2.2 k
R X 100	20 k	19 to 22 k
R X 1 k	200 k	190 to 220 k

FREQUENCY RESPONSE CALIBRATION:

Range (V)	Applied (V)	Limits (V)
2.5	2 @ 30 Hz to 100 kHz	1.9 to 2.1

202 (SIMPSON) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications	
DC Volts	Ranges:	
	30 to 330 mV	0.1 to 1.1 V
	1 to 11 V	10 to 110 V
	30 to 330 V	100 to 1100 V
	Accuracy: ±2% (Scale Range 0.1 to 1.1 only)	
AC Volts	Ranges:	
	1 to 11 V	10 to 110 V
	30 to 330 V	100 to 1100 V
	Accuracy: ±3% (Scale Range 0.1 to 1.1 only)	
DC Current	Ranges:	
	10 to 110 A	0.1 to 1.1 mA
	1 to 11 mA	10 to 110 mA
	0.1 to 1.1 A	
	Accuracy: ±2% (Scale Range 0.1 to 1.1 only)	

CALIBRATION PERFORMANCE TABLE

RESISTANCE:

Range (Ω)		Mid Scale (Ω)
R X 1	0 to 500	4
R X 10	0 to 5000	40
R X 1 k	0 to 400 k	7 k
R X 10 k	0 to 4 M	70 k
R X 100 k	0 to 40 M	700 k

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1100	1000	980 to 1020
330	300	294 to 306
110	110	107.8 to 112.2
	100	98 to 102
	90	88.2 to 91.8
	80	78.4 to 81.6

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
110	70	68.6 to 71.4
	60	58.8 to 61.2
	50	49 to 51
	40	39.2 to 40.8
	30	29.4 to 30.6
	20	19.6 to 20.4
	10	9.8 to 10.2
11	10	9.8 to 10.2
1.1	1	0.98 to 1.02
330 mV	330 mV	294 to 306 mV

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1100	1000	997 to 1003
330	300	291 to 309
110	100	106.7 to 113.3
	70	67.9 to 72.1
	40	38.8 to 41.2
	20	19.4 to 20.6
	10	9.7 to 10.3
11	10	9.7 to 10.3

DC CURRENT CALIBRATION:

Range	Applied	Limits
1.1 A	1 A	0.98 to 1.02 A
110 mA	100 mA	98 to 102 mA
11 mA	10 mA	9.8 to 10.2 mA
1.1 mA	1 mA	0.98 to 1.02 mA
110 µA	100 µA	98 to 102 µA

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.8 to 11.2
R X 10	100	88 to 112
R X 1 k	10 k	8.8 k to 11.2 k
R X 10 k	100 k	88 k to 112 k
R X 100 k	1 M	0.88 M to 1.12 M

22-202A (TANDY) MULTITESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.6 - 1200 V
	Accuracy: ±3% of FS
DC Current	Ranges: 0 to 60 µA - 300 mA
	Accuracy: ±3% of FS
AC Volts	Ranges: 0 to 15 - 1200 V
	Accuracy: ±4% of FS
Resistance	Ranges: 0 to 2 k - 2 MΩ (center scale 24)
	Accuracy: ±3% of scale length

NOTE

Calibrate TI laying flat on a nonmetallic surface. Use a range that results in a reading in the upper 1/3 of the meter scale.

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
0.6	0.6	0.582 to 0.618
3	3	2.91 to 3.09
15	15	14.55 to 15.45
60	60	58.20 to 61.80
	50	48.20 to 51.80
	40	38.20 to 41.80
300 & up	300	291 to 309
	600	582 to 618
	1000	964 to 1036

DC CURRENT CALIBRATION:

Range	Applied	Limits
60 µA	60 µA	58.2 to 61.8 µA
3 mA	3 mA	2.91 to 3.09 mA
30 mA	30 mA	29.1 to 30.9 mA
300 mA	300 mA	291 to 309 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
15	15	14.4 to 15.6
60	60	57.6 to 62.4
150	150	144 to 156
600 & up	600	576 to 624
	1000	952 to 1048

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	24	24 ±3% of scale length
R X 10	240	240 ±3% of scale length
R X 100	2400	2400 ±3% of scale length
R X 1 k	24000	24000 ±3% of scale length

221 (SIMPSON) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 300, 1000, 5000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 100 µA 0 to 10, 100, 500 mA 0 to 10 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 100 0 to 200,000 Ω R X 10,000 0 to 20 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1850	1700 to 2000
5000	1000	850 to 1150
1000	1000	970 to 1030
300	300	291 to 309
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
10 mA	10 mA	9.7 to 10.3 mA
100 µA	100 µA	97 to 103 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	750 to 1250
1000	1000	950 to 1050
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.375 to 2.625

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 100	1 k	950 to 1050
R X 10 k	100 k	95 k to 105 k

22-203A, 22-203U (MICRONTA) MULTITESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0.3, 1, 3, 10, 30, 100, 300 and 1 k
	Accuracy: ±3% FS
AC Volts	Ranges: 10, 30, 100, 300 and 1 k
	Accuracy: ±4% FS
DC Current	Ranges: 3 mA, 300 mA, 100 µA, 10 A and 30 mA
	Accuracy: ±3% FS
Resistance	Ranges: R X 1, R X 10, R X 1 k and R X 10 k
	Accuracy: 3% of linear scale length (Center Mode is 10)

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied (DCV)	Limits (DCV)
1 k	900	870 to 930
300	270	261 to 279
100	90	87 to 93
30	25	24.1 to 25.9
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	5	4.7 to 5.3
	4	3.7 to 4.3
	2	1.7 to 2.3
3	2.8	2.91 to 3.09
1	0.9	0.87 to 0.96
0.3	0.28	0.271 to 0.289

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range	Applied (VAC)	Limits (VAC)
1 k	900	860 to 940
300	280	268 to 292
100	90	86 to 94
30	28	26.8 to 29.2
10	9	8.6 to 9.4

DC CURRENT CALIBRATION:

Range	Applied (DC)	Limits (DC)
10 A	9 A	8.7 to 9.3 A
100 µA	90 µA	87 to 93 µA
300 mA	280 mA	271 to 289 mA
30 mA	20 mA	29.10 to 30.90 mA
3 mA	2.8 mA	2.71 to 2.89 mA

RESISTANCE CALIBRATION:

Range	Mid Scale (Ω)	Limits
R X 1	10	±3% of linear scale length
R X 10	100	±3% of linear scale length
R X 1 k	10 k	±3% of linear scale length
R X 10 k	100 k	±3% of linear scale length

22-204A, 22-205, 22-207 (MICRONTA) OHMS/VOLTS MULTITESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 - 125 mV to 1000 V
	Accuracy: ±3%, 5 to 250 V; ±4%, 125 mV to 2.5 V and 500 to 1000 V
(For 22-205)	Ranges: 500 mV to 1000 V
	Accuracy: ±3%
(For 22-207)	Ranges: 0 to 500 mV to 1000 V
	Accuracy: ±3% FS, 500 mV to 500 V ±4% FS, 1000 V
DC Current	Ranges: 0 - 25 µA to 10 A
	Accuracy: ±3%
(For 22-205, 22-207)	Ranges: 10, 50, 500 µA/5, 50, 500 mA/10 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 - 5 to 1000 V
	Accuracy: ±4%
Resistance	Ranges: 0 - 2 k to 20 M (center Mode 10)
	Accuracy: ±3% of scale length
(For 22-205) center scale 13	Ranges: 0 - 1 k, 10 k, 1 M, 10 M, 100 M
(For 22-207) center scale 8	Accuracy: ±3% of scale length

NOTE

When the V-ohm-A/V-A/2 switch is in the V-A/2 position, the full scale reading will be 1/2 of the full scale range setting. For 22-204A only)

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Range Doubler	Applied (V)	Limits (V)
1000 (22-205)	V-ohm-A	970	940 to 1000
1000	V-ohm-A	960	920 to 1000
1000	V-A/2	480	460 to 500
500 (22-207)	V-ohm-A	480	465 to 495
250	V-ohm-A	250	242.5 to 257.5
		200	192.5 to 207.5

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range	Range Doubler	Applied (V)	Limits (V)
250		150	142.5 to 157.5
250	V-A/2	125	121.25 to 128.75
100 (22-207)	V-ohm-A	97	94 to 100
50		25	24.25 to 25.75
50 (22-207)	V-ohm-A	48	46.5 to 49.5
50	V-ohm-A	50	48.5 to 51.5
10		10	9.7 to 10.3
10 (22-207)	V-ohm-A	9.7	9.4 to 10.0
10	V-A/2	5	4.85 to 5.15
5 (22-207)		4.8	4.65 to 4.95
2.5		1.25	1.20 to 1.30
2.5	V-ohm-A	2.5	2.4 to 2.6
1 (22-207)		0.97	0.94 to 1.00
0.25		0.25	0.24 to 0.26
0.25	V-A/2	0.125	0.12 to 0.13
500 mV (22-207)		480	465 to 495

DC CURRENT CALIBRATION:

Range	Range Doubler	Applied	Limits
10 µA (22-205, 22-207)		0.97 µA	0.94 to 1.00 µA
50 µA	V-A/2	25 µA	24.25 to 25.75 µA
50 µA	V-ohm-A	50 µA	48.5 to 51.5 µA
500 µA (22-205, 22-207)		485 µA	470 to 500 µA
5 mA		5 mA	4.85 to 5.15 mA
5 mA (22-205, 22-207)		4.85 mA	4.7 to 5.0 mA
5 mA	V-A/2	2.5 mA	2.425 to 2.575 mA
50 mA		25 mA	24.25 to 25.75 mA
50 mA (22-205, 22-207)		48.5	47 to 50 mA
50 mA	V-ohm-A	50 mA	48.5 to 51.5 mA
500 mA		500 mA	485 to 575 mA
500 mA	V-A/2	250 mA	242.5 to 257.5 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION: (Cont.)

Range	Range Doubler	Applied	Limits
10 A		5 A	4.85 to 5.15 A
10 A	V-ohm-A	10 A	9.7 to 10.3 A

AC VOLTS CALIBRATION:

Range	Range Doubler	Applied (V)	Limits (V)
10	V-ohm-A	10	9.6 to 10.4
10	V-A/2	5	4.8 to 5.2
50		25	24 to 26
50	V-ohm-A	50	48 to 52
250		250	240 to 260
250	V-A/2	125	120 to 130
1000		500	480 to 520
1000	V-ohm-A	960	920 to 1000

RESISTANCE CALIBRATION:

Range	Range Doubler	Applied (Ω)	Limits (Ω)
R X 1	V-ohm-A	10	10 ±3% of scale length
R X 10		100	100 ±3% of scale length
R X 100		1 k	1 k ±3% of scale length
R X 1 k (22-205)		13 k	13 k ±3% of scale length
R X 1 k		10 k	10 k ±3% of scale length
R X 1 k (22-207)		8 k	8 k ±3% of scale length
R X 10 k		100 k	100 k ±3% of scale length
R X 10 k (22-207)		80 k	80 k ±3% of scale length
R X 10 k (22-205)		130 k	130 k ±3% of scale length
R X 1 M (22-207)		800 k	800 k ±3% of scale length
R X 1 M (22-205)		1300 k	1300 k ±3% of scale length

22-204C (TANDY) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1000 V Accuracy: ±3%; Except as follows
	Ranges: 125 mV to 2.5 V and 500 V to 1000 V
	Accuracy: ±4%
AC Volts	Ranges: 0 to 1000 V
	Accuracy: ±4%
DC Current	Ranges: 0 to 10 A
	Accuracy: ±3%
Resistance	Ranges: 0 to 20 MΩ
	Accuracy: ±3% of scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied	Limits
250 mV	240 mV	230.4 to 249.6 mV
2.5 V	2.4 V	2.304 to 2.496 mV
10 V	2 V	1.94 to 2.06 V
	4 V	3.88 to 4.12 V
	6 V	5.82 to 6.18 V
	8 V	7.76 to 8.24 V
50 V	48 V	46.56 to 49.44 V
250 V	240 V	232.8 to 247.2 V
1000 V V-A/2	480 V	460.8 to 499.2 V
1000 V	960 V	921.6 to 998.4 V

AC VOLTS CALIBRATION:

Range	Applied	Limits
10 V	2 V	1.92 to 2.08 V
	4 V	3.84 to 4.16 V

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION: (Cont.)

Range	Applied	Limits
10 V	6 V	5.76 to 6.24 V
	8 V	7.68 to 8.32 V
50 V	48 V	46.08 to 49.92 V
250 V	240 V	230.4 to 249.6 V
1000 V V-A/2	480 V	460.8 to 499.2 V
1000	960 V	921.6 to 998.4 V

DC CURRENT CALIBRATION:

Range	Applied	Limits
50 µA	48 µA	46.56 to 49.44 µA
5 mA	4.8 mA	4.656 to 4.944 mA
50 mA	48 mA	46.56 to 49.44 mA
500 mA	480 mA	465.6 to 494.4 mA
10 A V-A/2	4.8 A	4.656 to 4.944 A
10	9.6 A	9.312 to 9.888 A

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	100	100 ±3% of scale length
R X 10	1000	1000 ±3% of scale length
R X 100	10 k	10 k ±3% of scale length
R X 1 k	100 k	100 k ±3% of scale length
R X 10 k	1 M	1 M ±3% of scale length

22-207 (TANDY CORP.) OHMS/VOLT MULTITESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0.5, 2.5, 10, 50, 250 and 1000 V
	Accuracy: ±3% FS; 0.5 to 250 V ±4% FS; 1000 V range
DC Current	Ranges: 10, 50 and 500 µA, 5, 50 and 500 mA 10 A
	Accuracy: ±3% FS
AC Volts	Ranges: 5, 10, 50, 250 and 1000 V
	Accuracy: ±4% FS
Resistance	Ranges: 1 k, 10 k, 1 M, 10 M and 100 M (Center Scale 8)
	Accuracy: ±3% of scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (DCV)	Applied (DCV)	Limits (DCV)
1000	800	760 to 840
250	225	217.5 to 232.5
50	45	43.5 to 46.5
	40	38.5 to 41.5
	30	28.5 to 31.5
	20	18.5 to 21.5
	10	8.5 to 11.5
	5	3.5 to 6.5
10	8	7.7 to 8.3
2.5	2	1.925 to 2.075
0.5	0.4	0.385 to 0.415

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range (DC)	Applied (DC)	Limits (DC)
10 A	8 A	7.7 to 8.3 A
500 mA	450 mA	435 to 465 mA
50 mA	45 mA	43.5 to 46.5 mA
5 mA	4 mA	3.85 to 4.15 mA
500 µA	450 µA	435 to 465 µA
50 µA	45 µA	43.5 to 46.5 µA
10 µA	10 µA	9.7 to 10.3 µA
8	8 µA	7.7 to 8.3 µA
6	6 µA	5.7 to 6.3 µA
4	4 µA	3.7 to 4.3 µA
2	2 µA	1.7 to 2.3 µA

AC VOLTS CALIBRATION:

Range (ACV)	Applied (ACV)	Limits (ACV)
1000	900	860 to 940
250	240	230 to 250
50	45	43 to 47
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
1 k	800	800 ±3% scale length
10 k	8 k	8 k ±3% scale length
1 M	800 k	800 k ±3% scale length
10 M	8 M	8 M ±3% scale length
100 M	80 M	80 M ±3% scale length

22-208 (TANDY) FET VOM

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1000 V in 8 ranges
	Accuracy: ±3% FS
DC Current	Ranges: 100 µA, 3 mA, 30 mA, 300 mA, 10 A
	Accuracy: ±3%
AC Volts	Ranges: 0 - 3, 30, 100, 300, 1000 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 1 k R X 10 0 to 10 k R X 1 k 0 to 1 M R X 10 k 0 to 10 M R X 1 M 0 to 100 M
	Accuracy: ±3% of scale length (center scale is 10)

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (DCV)	Applied (DCV)	Limits (DCV)
0.3	0.3	0.291 to 0.309
1	1	0.97 to 1.03
3	3	2.91 to 3.09
10	10	9.7 to 10.3
	9	8.7 to 9.3
	8	7.7 to 8.3
	6	5.8 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
	1	0.7 to 1.3
30	30	29.1 to 30.9
100	100	97 to 103
300	300	291 to 309
1000	900	870 to 930

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
100 µA	100 µA	97 to 103 µA
3 mA	3 mA	2.91 to 3.09 mA
30 mA	30 mA	29.1 to 30.9 mA
300 mA	300 mA	291 to 309 mA
10 A	10 A	9.7 to 10.3 A

AC VOLTS CALIBRATION:

Range (ACV)	Applied (ACV)	Limits (ACV)
3	3	2.88 to 3.12
30	30	28.8 to 31.2
	25	23.8 to 26.2
	20	18.8 to 21.2
	10	8.8 to 11.2
	5	3.8 to 6.2
300	300	288 to 312
1000	900	860 to 940

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	10 ±3% linear scale length
R X 10	100	100 ±3% linear scale length
R X 1 k	10 k	10 k ±3% linear scale length
R X 10 k	100 k	100 k ±3% linear scale length
R X 1 M	10 M	10 M ±3% linear scale length

230 (SIMPSON) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 10, 50, 250, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 10, 50, 250 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 250, 1000 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 100 0 to 100,000Ω
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
250	250	237.5 to 262.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 100	1 k	950 to 1050

240 (SIMPSON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 15, 75, 300, 750, 3000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 15, 150, 750 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 15, 150, 750, 3000 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 3000 Ω R X 100 0 to 300,000Ω
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
3000	1910	1820 to 2000
3000	1000	910 to 1090
750	750	727.5 to 772.5
300	300	291 to 309
75	75	72.75 to 77.25
15	15	14.55 to 15.45
	10	9.55 to 10.45
	5	4.55 to 5.45

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
750	750	727.5 to 772.5
150	150	145.5 to 154.5
15	15	14.55 to 15.45

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
3000	1000	850 to 1150
750	750	712.5 to 787.5
150	150	142.5 to 157.5
15	15	14.25 to 15.75
	10	9.25 to 10.75
	5	4.25 to 5.75

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 100	1 k	950 to 1050

26 (CRESCENT COMMUNICATIONS CORP.) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 20, 60, 200, 400, 800 V
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 20, 60, 200, 400, 800 V
	Accuracy: ±3% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 10 0 to 20,000 Ω R X 1 k 0 to 2 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
800	800	776 to 824
400	400	388 to 412
200	200	194 to 206
60	60	58.2 to 61.8
20	20	19.4 to 20.6
	15	14.4 to 15.6
	10	9.4 to 10.6
	5	4.4 to 5.6

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
800	800	776 to 824
400	400	388 to 412
200	200	194 to 206
60	60	58.2 to 61.8
20	20	19.4 to 20.6
	15	14.4 to 15.6
	10	9.4 to 10.6
	5	4.4 to 5.6

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9 to 11
R X 10	100	90 to 110
R X 1 k	10 k	9 k to 11 k

260 SERIES 3 A (SIMPSON) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 250 mV 0 to 2.5, 10, 50, 250, 1000, 5000 V Accuracy: ±3% FS
DC Current	Ranges: 0 to 50 µA 0 to 1, 10, 100, 500 mA 0 to 10 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 100 0 to 200,000 Ω R X 10,000 0 to 20 MΩ Accuracy: ±3% of arc

CALIBRATION PERFORMANCE TABLE

NOTE

Perform negative polarity check on 2.5 V range.

DC VOLTS CALIBRATION:

Range	Applied (VDC)	Limits (VDC)
5000 V	1850	1700 to 2000
5000 V	1000	850 to 1150
1000 V	1000	970 to 1030
250 V	250	242.5 to 257.5
50 V	50	48.5 to 51.5
10 V	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5 V	2.5	2.425 to 2.575
250 mV *	250 mV	242.5 to 257.5 mV

* The positive test lead must be connected to the 50 µA terminal and RANGE switch set in the 50 µA position before applying 250 mV.

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
10 mA	10 mA	9.7 to 10.3 mA
1 mA	1 mA	0.97 to 1.03 mA
50 µA	50 µA	48.5 to 51.5 µA

AC VOLTS CALIBRATION:

Range (VAC)	Applied (VAC)	Limits (VAC)
5000	1000	750 to 1250
1000	1000	950 to 1050
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.375 to 2.625

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.8 to 11.2
R X 100	1 k	880 to 1120
R X 10 k	100 k	88 k to 112 k

262 (SIMPSON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.6, 8, 40, 160, 400, 1600 V 4000 V w/4000 VDC Probe Extension
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 80, 160 µA 0 to 1.6, 16, 160 mA 0 to 1.6, 16 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 8, 40, 160, 800 V
	Accuracy: ±5%
Resistance	Ranges: R X 1 500 Ω R X 10 0 to 5 kΩ R X 100 0 to 50 kΩ R X 1 k 0 to 500 kΩ R X 10 k 0 to 5 MΩ R X 100 k 0 to 50 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
4000 *	1880	1760 to 2000
4000 *	1000	880 to 1120
1600	1600	1552 to 1648
400	400	388 to 412
160	160	155.2 to 164.8
40	40	38.8 to 41.2
8	8	7.76 to 8.24
1.6	1.6	1.552 to 1.648
	1.2	1.152 to 1.248
	0.8	0.752 to 0.848
	0.4	0.352 to 0.448

* Use TI 4000 VDC Probe Extension.

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
16 A	16 A	15.52 to 16.48 A
1.6 A	1.6 A	1.552 to 1.648 A
160 mA	160 mA	1552. to 164.8 mA
16 mA	16 mA	15.52 to 16.48 mA
1.6 mA	1.6 mA	1.552 to 1.648 A
160 µA	160 µA	155.2 to 164.8 µA
80 µA	80 µA	77.6 to 82.4 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
800	800	760 to 840
160	160	152 to 168
40	40	38 to 42
8	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
3	3	2.85 to 3.15

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.7 to 11.5
R X 10	100	87 to 115
R X 100	1 k	870 to 1150
R X 1 k	10 k	8.7 k to 11.5 k
R X 10 k	100 k	87 k to 115 k
R X 100 k	1 M	870 k to 1.15 M

262 - SERIES 3 (SIMPSON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.6, 8, 40, 160, 400, 800, 1600, 4000 V Accuracy: ±2% FS up to 1600 V Ranges ±3% FS on 4000 V Ranges (With external multiplier)
DC Current	Ranges: 0 to 80, 160 μA 0 to 1.6, 16, 160 mA 0 to 1.6, 8 A Accuracy: ±2% FS
AC Volts	Ranges: 0 to 3, 8, 40, 160, 400, 800 V Accuracy: ±3% FS
Resistance	Ranges: R X 1 0 to 500 Ω R X 10 0 to 5000 Ω R X 100 0 to 50,000 Ω R X 1 k 0 to 500,000 Ω R X 10 k 0 to 5 MΩ R X 100 k 0 to 50 MΩ Accuracy: ±2.5° of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
4000 *	1880	1760 to 2000
1600	1600	1568 to 1632
1600	1000	968 to 1032
800	800	784 to 816
400	400	392 to 408
160	160	156.8 to 163.2
40	40	39.2 to 40.8
	30	29.2 to 30.8
	20	19.2 to 20.8

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
40	10	9.2 to 10.8
8	8	7.84 to 8.16
1.6	1.6	1.568 to 1.632

* External Multiplier

DC CURRENT CALIBRATION:

Range	Applied	Limits
8 A	8 A	7.84 to 8.16 A
1.6 A	1.6 A	1.568 to 1.632 A
160 mA	160 mA	156.8 to 163.2 mA
16 mA	16 mA	15.68 to 16.32 mA
1.6 mA	1.6 mA	1.568 to 1.632 mA
160 µA	160 µA	156.8 to 163.2 µA
80 µA	80 µA	78.4 to 81.6 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
800	800	776 to 824
400	400	388 to 412
160	160	155.2 to 164.8
40	40	38.8 to 41.2
8	8	7.76 to 8.24
	6	5.76 to 6.24
	4	3.76 to 4.24
	2	1.76 to 2.24
3	3	2.91 to 3.09

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.8 to 11.2
R X 10	100	88 to 112

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION: (Cont.)

Range	Applied (Ω)	Limits (Ω)
R X 100	1 k	880 to 1120
R X 1 k	10 k	8.8 k to 11.2 k
R X 10 k	100 k	88 k to 112 k
R X 100 k	1 M	880 k to 1.12 M

267 (SIMPSON) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
Test Instrument Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.25, 2.5, 10, 50, 250, 500, 1000 V Accuracy: ±3% FS
DC Current	Ranges: 0 to 50 µA 0 to 1, 10, 100, 500 mA 0 to 10 A Accuracy: ±2% FS, 50 µA Range ±3% FS, 1 to 500 mA Ranges ±3% FS, 10 A Range
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 500, 1000 V Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 100 0 to 200 kΩ R X 10,000 0 to 20 MΩ Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575
0.25	0.25	0.2425 to 0.2575

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
10 mA	10 mA	9.7 to 10.3 mA
1 mA	1 mA	0.97 to 1.03 mA
50 µA	50 µA	49 to 51 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
500	500	475 to 525
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.375 to 2.625

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.8 to 11.2
R X 100	1 k	880 to 1120
R X 10 k	100 k	88 k to 112 k

268 (SIMPSON) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 12, 60, 300, 600, 1200 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 60 µA 0 to 1.2, 12, 120, mA 0 to 12 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 12, 60, 300, 600, 1200 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 100 0 to 200 kΩ R X 10,000 0 to 20 MΩ
	Accuracy: ±3° of arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1200	1164 to 1236
1200	1000	964 to 1036
600	600	582 to 618
300	300	291 to 309
60	60	58.2 to 61.8
	50	48.2 to 51.8
	40	38.2 to 41.8
	30	28.2 to 31.8
	20	18.2 to 21.8
12	12	11.64 to 12.36
3	3	2.91 to 3.09

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
12 A	12 A	11.64 to 12.36 A
120 mA	120 mA	116.4 to 123.6 mA
12 mA	12 mA	11.64 to 12.36 mA
1.2 mA	1.2 mA	1.164 to 1.236 mA
60 µA	60 µA	58.2 to 61.8 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1000	940 to 1060
600	600	570 to 630
300	300	285 to 315
60	60	57 to 63
	50	47 to 53
	40	37 to 43
	30	27 to 33
	20	17 to 23
12	12	11.4 to 12.6
3	3	2.85 to 3.15

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.8 to 11.2
R X 100	1 k	880 to 1120
R X 10 k	100 k	88 k to 112 k

269 (SIMPSON) VOLT-OHM-MICROAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.6, 8, 40, 160, 400, 1600, 4000 V Accuracy: ±3% FS
DC Current	Ranges: 0 to 16, 160 μA 0 to 1.6, 16, 160 mA 0 to 1.6, 16 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 8, 40, 160, 800 V Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 10 0 to 20,000 Ω R X 100 0 to 200,000 Ω R X 1 k 0 to 2 MΩ R X 10 k 0 to 20 MΩ R X 100 k 0 to 200 MΩ Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
4000 *	1880	1760 to 2000
1600	1600	1552 to 1648
1600	1000	952 to 1048
400	400	388 to 412
160	160	155.2 to 164.8
40	40	38.8 to 41.2
	30	28.8 to 31.2
	20	18.8 to 21.2
	10	8.8 to 11.2
8	8	7.76 to 8.24
1.6	1.6	1.552 to 1.648

* Calibrate 4000 V range only if High Voltage Probe accompanies TI.

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
16 A	16 A	15.52 to 16.48 A
1.6 A	1.6 A	1.552 to 1.648 A
160 mA	160 mA	155.2 to 164.8 mA
16 mA	16 mA	15.52 to 16.48 mA
1.6 mA	1.6 mA	1.552 to 1.648 mA
160 µA	160 µA	155.2 to 164.8 µA
16 µA	16 µA	15.52 to 16.48 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
800	800	760 to 840
160	160	152 to 168
40	40	38 to 42
	30	28 to 32
	20	18 to 22
	10	8 to 12
8	8	7.60 to 8.40
3	3	2.85 to 3.15

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.8 to 11.2
R X 10	100	88 to 112
R X 100	1 k	880 to 1120
R X 1 k	10 k	8.8 k to 11.2 k
R X 10 k	100 k	88 k to 112 k
R X 100 k	1 M	880 k to 1.12 M

269 SERIES II, 269 AF (SIMPSON) VOLT-OHM-MICROAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.6, 8, 40, 160, 400, 800, 1600, 4000 V Accuracy: ±2% FS, 1.6 to 1600 V Ranges ±4% FS, 4000 V Range
DC Current	Ranges: 0 to 16, 160 μA 0 to 1.6, 16, 160 mA 0 to 1.6, 8 A Accuracy: ±2% FS
AC Volts	Ranges: 0 to 3, 8, 40, 160, 400, 800 V Accuracy: ±3% FS
Resistance	Ranges: R X 1 0 to 2000 Ω R X 10 0 to 20,000 Ω R X 100 0 to 200 kΩ R X 1 k 0 to 2 MΩ R X 10 k 0 to 20 MΩ R X 100 k 0 to 200 MΩ Accuracy: ±3° of linear arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
4000 *	1840	1680 to 2000
1600	1600	1568 to 1632
1600	1000	968 to 1032
800	800	784 to 816
400	400	392 to 408
160	160	156.8 to 163.2
40	40	39.2 to 40.8
	30	29.2 to 30.8
	20	19.2 to 20.8

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
40	10	9.2 to 10.8
8	8	7.84 to 8.16
1.6	1.6	1.568 to 1.632

* Use TI High Voltage extension probe.

DC CURRENT CALIBRATION:

Range	Applied	Limits
8 A	8 A	7.84 to 8.16 A
1.6 A	1.6 A	1.568 to 1.632 A
160 mA	160 mA	156.8 to 163.2 mA
16 mA	16 mA	15.68 to 16.32 mA
1.6 mA	1.6 mA	1.568 to 1.632 mA
160 µA	160 µA	156.8 to 163.2 µA
16 µA	16 µA	15.68 to 16.32 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
800	800	776 to 824
400	400	388 to 412
160	160	155.2 to 164.8
40	40	38.8 to 41.2
	30	28.8 to 31.2
	20	18.8 to 21.2
	10	8.8 to 11.2
8	8	7.76 to 8.24
3	3	2.91 to 3.09

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.6 to 11.5
R X 10	120	106 to 135

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION: (Cont.)

Range	Applied (Ω)	Limits (Ω)
R X 100	1200	1060 to 1350
R X 1 k	12 k	10.6 k to 13.5 k
R X 10 k	120 k	106 k to 135 k
R X 100 k	1200 k	1060 k to 1350 k

277 (B & K DYNASCAN) ELECTRONIC MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 1, 10, 100 µA 1, 10, 30, 100, 300 mA, 1 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000 V
	Accuracy: ±3% FS @ 60 Hz
Resistance	Ranges: R X 1, R X 10, R X 100, R X 1 k, R X 10 k, R X 100 k, R X 1 M
	Accuracy: ±3° of arc

NOTE

Calibrate TI in vertical position. Perform a DC voltage linearity check in the horizontal position on same range as vertical linearity. If the horizontal indication is not within the listed specification, a limited Calibration Certificate must be attached with the horizontal DC accuracy annotated. Readjust the mechanical zero in the horizontal position if required. Protect calibration bench surface from damage by protruding screws on rear of TI.

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	980 to 1020
300	300	294 to 306
100	100	98 to 102
30	30	29.4 to 30.6
	20	19.4 to 20.6
	10	9.4 to 10.6
10	10	9.8 to 10.2
3	3	2.94 to 3.06
1	1	0.98 to 1.02
0.3	0.3	0.294 to 0.306
0.1	0.1	0.098 to 0.102

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
1 A	1 A	0.97 to 1.03 A
300 mA	300 mA	291 to 309 mA
100 mA	100 mA	97 to 103 mA
30 mA	30 mA	29.1 to 30.9 mA
	20 mA	19.1 to 20.9 mA
	10 mA	9.1 to 10.9 mA
10 mA	10 mA	9.7 to 10.3 mA
1 mA	1 mA	0.97 to 1.03 mA
100 µA	100 µA	97 to 103 µA
10 µA	10 µA	9.7 to 10.3 µA
1 µA	1 µA	0.97 to 1.03 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V @ 60 Hz)	Limits (V)
1000	1000	970 to 1030
300	300	291 to 309
100	100	97 to 103
30	30	29.1 to 30.9
	20	19.1 to 20.9
	10	9.1 to 10.9
10	10	9.7 to 10.3
3	3	2.91 to 3.09
1	1	0.97 to 1.03
0.3	0.3	0.291 to 0.309
0.1	0.1	0.097 to 0.103

RESISTANCE CALIBRATION: (HI & LO)

Range (Ω)	Applied (Ω)	Limits (Ω)
R X 1	10	8.0 to 12.5
R X 10	100	80 to 125

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION: (HI & LO) (Cont.)

Range (Ω)	Applied (Ω)	Limits (Ω)
R X 100	1 k	800 to 1250
R X 1 k	10 k	8.0 to 12.5 k
R X 10 k	100 k	80 to 125 k
R X 100 k	1 M	800 to 1250 k
R X 1 M	10 M	8.0 to 12.5 M

303-3XL (SIMPSON) SOLID STATE ELECTRONIC RECHARGEABLE V-O-M

TI Characteristics	Performance Specifications
DC Volts	Ranges: 30 mV, 0.1 V, 0.3 V, 1 V, 3 V, 10 V, 30 V, 100 V, 300 V and 1000 V Accuracy: ±2% (with probe on ISOLATION DCV) Note: Reading is 1% higher when probe is set on DIRECT, or if regular test leads are used.
DC Current	Ranges: 30 µA, 1 mA, 30 mA, 1 A and 10 A Accuracy: ±2% FS
AC Volts	Ranges: 30 mV, 0.1 V, 0.3 V, 1 V, 3 V, 10 V, 30 V, 100 V, 300 V and 1000 V Accuracy: Percent of FS

	50/60 Hz	400 Hz	20 Hz to 20 kHz	2 Hz to 100 kHz
30 mV to 10 V	±2%	±2%	-2.8% to 2.9%	-10.8% to 12%
30 V to 100 V	±2%	±2%	*	*
300 V	±2%	±3%	*	*
1000 V	±3.5%	±4%	*	*

* Not tested

AC Current	Ranges: 30 µA, 1 mA, 30 mA, 1 A and 10 A Accuracy: ±3% FS @ 50 to 400 Hz ±4% FS @ 20 Hz to 20 kHz ±10% FS @ 2 Hz to 100 kHz
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100,000 Ω R X 10k 0 to 10 MΩ R X 100 k 0 to 100 MΩ R X 1 M 0 to 1000 MΩ Accuracy: L. P. OHMS, ±1° arc (±4% at mid-scale reading); subtract lead resistance on R X 1 range Accuracy: DIODE OHMS, ±2.5° arc (±10% at mid-scale reading); subtract lead resistance on R X 1 range Note: 10 Ω is center scale

NOTE

AC and DC voltages may be measured directly in ranges of 0 to 300 V at input impedance of 10 MΩ/V, 31.9 MΩ/V at 1000 V ranges. For voltages above 300 VAC/DC, connect test leads to TI 1000 VAC or VDC terminals and COMMON. Annotate the special block of the Certification Label; DCV readings are 1% higher when probe is set on DIRECT, or if regular test leads are used on the 30 mV to 300 VDC ranges.

PRELIMINARY OPERATIONS:

Range switch to 300 V.
Model switch to BATT, the meter pointer must indicate with BATT OK span.
Range switch to OFF; ZERO TI meter pointer, as required.
Model switch to AC.
Range switch to 30 mV; short test leads together, adjust ZERO ADJ until TI pointer indicates zero.

NOTE

On the 30 mV to 300 VDC ranges, if the probe is not available, place a 100 kΩ Decade Resistor (2.3) in series with the test leads. This compensates for the 100 kΩ resistance of the probe.

CALIBRATION PERFORMANCE TABLE

DC VOLTAGE CALIBRATION:

Mode	Range	Applied	Limits W/Probe
± DC	30 mV	30 mV	29.40 to 30.60 mV
	0.1 V	100 mV	98 to 102 mV
	0.3 V	0.3 V	0.294 to 0.306 V
	1 V	1.0 V	0.98 to 1.02 V
	3 V	3.0 V	2.94 to 3.06 V
	3 V	2.0 V	1.94 to 2.06 V
	3 V	1.0 V	0.94 to 1.06 V
	10 V	10 V	9.80 to 10.20 V
	30 V	30 V	29.40 to 30.60 V
	100 V	100 V	98.00 to 102.00 V
	300 V	300 V	294.00 to 306.00 V
	1000 V *	900 V	880.00 to 920.00 V

* Connect test leads directly to 1000 VDC terminals and common.

DC CURRENT CALIBRATION:

Mode	Range	Applied	Limits
± DC	30 µA	30 µA	29.40 to 30.60 µA
	1 mA	1 mA	0.98 to 1.02 mA
	30 mA	30 mA	29.40 to 30.60 mA
	1 A	1 A	0.98 to 1.02 A
	10 A	10 A	9.80 to 10.20 A

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTAGE CALIBRATION: (See Note)

Mode	Range	Applied	Limits
AC	30 mV	10 mV @ 50 Hz	9.4 to 10.6 mV
	30 mV	20 mV @ 400 Hz	19.4 to 20.6 mV
	30 mV	30 mV @ 400 Hz	29.4 to 30.6 mV
	30 mV	30 mV @ 20 kHz	26.76 to 33.60 mV
	0.1 V	40 mV @ 400 Hz	38 to 42 mV
	0.1 V	0.1 V @ 400 Hz	98 to 102 mV
	0.1 V	0.1 V @ 20 kHz	0.089 to 0.112 V
	0.3 V	0.3 V @ 400 Hz	0.294 to 0.306 V
	0.3 V	0.3 V @ 10 kHz	0.2916 to 0.3087 V
	0.3 V	0.3 V @ 20 kHz	0.2676 to 0.3360 V
	0.3 V	0.3 V @ 50 kHz	0.2676 to 0.3360 V
	1 V	1 V @ 50 Hz	0.98 to 1.02 V
	1 V	1 V @ 400 Hz	0.98 to 1.02 V
	3 V	3 V @ 400 Hz	2.94 to 3.06 V
	3 V	3 V @ 10 kHz	2.916 to 3.087 V
	3 V	3 V @ 50 kHz	2.676 to 3.36 V
	10 V	10 V @ 20 kHz	8.92 to 11.20 V
	10 V	10 V @ 10 kHz	9.72 to 10.29 V
	10 V	10 V @ 50 kHz	8.92 to 11.20 V
	10 V	10 V @ 400 Hz	9.8 to 10.2 V
	30 V	30 V @ 400 Hz	29.4 to 30.6 V
	30 V	30 V @ 50 Hz	29.4 to 30.6 V
	100 V	100 V @ 50 Hz	98 to 102 V
	100 V	100 V @ 400 Hz	98 to 102 V
	300 V	300 V @ 400 Hz	291 to 309 V
	300 V	300 V @ 50 Hz	294.0 to 306.0 V
	1000 V	900 V @ 400 Hz	860 to 940 V
	1000 V	150 V @ 50 Hz	115 to 185 V

NOTE: TI isolation probe switch to DIRECT.

CALIBRATION PERFORMANCE TABLE (Cont.)

AC CURRENT CALIBRATION:

Mode	Range	Applied	Limits
AC	30 µA	30 µA @ 400 Hz	28.8 to 31.2 µA
	1 mA	1 mA @ 400 Hz	0.96 to 1.04 mA
	30 mA	30 mA @ 400 Hz	28.8 to 31.2 mA
	1 A	1 A @ 400 Hz	0.96 to 1.04 A
	10 A	10 A @ 400 Hz	9.6 to 10.4 A

RESISTANCE CALIBRATION: (See Note)

Mode	Range	Applied (Ω)	Limits (Ω)
L.P. OHMS	R X 1	10	9.6 to 10.4
	R X 10	100	96 to 104
	R X 100	1000	960 to 1040
	R X 1 k	10 k	9.6 to 10.4 k
	R X 10 k	100 k	96 to 104 k
	R X 100 k	1 M	0.96 to 1.04 M
	R X 1 M	10 M	9.6 to 10.4 M
+ --> ¦ -- ohm	R-X 1 M	10 M	9 to 11 M
	R X 100 k	1000 k	900 to 1100 k
	R X 10 k	100 k	90 to 110 k
	R X 1 k	10 k	9 to 11 k
	R X 100	1000	900 to 1000
	R X 10	100	90 to 110
	R X 1	10	9 to 11
- --> ¦ -- ohm	R-X 1	10	9 to 11

NOTE

Adjust OHMS ADJ for ∞ on L. P. OHMS measurements, and once on DIODE OHMS measurements.

310 (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 12, 60, 300, 1200 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 600 μA 0 to 6, 60, 600 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 12, 60, 300, 1200 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 20,000 Ω R X 10 0 to 200,000 Ω R X 100 0 to 2 MΩ R X 1 k 0 to 20 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1200	1164 to 1236
1200	1000	964 to 1036
300	300	291 to 309
60	60	58.2 to 61.8
12	12	11.64 to 12.36
3	3	2.91 to 3.09
	2.5	2.41 to 2.59
	2	1.91 to 2.09
	1.5	1.41 to 1.59
	1	0.91 to 1.09

DC CURRENT CALIBRATION:

Range	Applied	Limits
600 mA	600 mA	582 to 618
60 mA	60 mA	58.2 to 61.8

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION (Cont.)

Range	Applied	Limits
6 mA	6 mA	5.82 to 6.18 mA
600 µA	600 µA	582 to 618 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1000	940 to 1060
300	300	285 to 315
60	60	57 to 63
12	12	11.4 to 12.6
3	3	2.85 to 3.15
	2.5	2.35 to 2.65
	2	1.85 to 2.15
	1.5	1.35 to 1.65
	1	0.85 to 1.15

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	100	85 to 115
R X 10	1 k	850 to 1150
R X 100	10 k	8.5 k to 11.5 k
R X 1 k	100 k	85 k to 115 k

310 TYPE 2, 3, 4, 5, 310-T (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 12, 60, 300, 600 V (Type 4 only), 1200 (Type 2, 3 and 5 only) Accuracy: ±3% FS
DC Current	Ranges: 0 to 0.6, 6, 60, 600 mA Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 12, 60, 300, 600 V (Type 4 only), 1200 (Type 2, 3 and 5 only) Accuracy: ±4% FS, 60 Hz
Resistance	Ranges: R X 1 0 to 20,000 Ω R X 10 0 to 200,000 Ω R X 100 0 to 2 MΩ R X 1 k 0 to 20 MΩ R X 1 0 to 10 kΩ R X 10 0 to 100 kΩ R X 100 0 to 1 MΩ R X 1 k 0 to 10 MΩ Accuracy: ±3% of ARC
AC Amperes	Calibrate IAW (T.O. 33K1-4-1081-1) Model 10C

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200 (type 2, 3 and type 5 only)	1000	964 to 1036
600 (4 only)	600	582 to 618
300	300	291 to 309
60	60	58.2 to 61.8
12	12	11.64 to 12.36
3	3	2.91 to 3.09
	2.5	2.41 to 2.59
	2	1.91 to 2.09
	1.5	1.41 to 1.59
	1	0.91 to 1.09

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
600	600	582 to 618
60	60	58.2 to 61.8
6	6	5.82 to 6.18
0.6	0.6	0.582 to 0.618

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200 (type 2, 3 and 5 only)	1000	952 to 1048
600 (type 4 only)	600	576 to 624
300	300	288 to 312
60	60	57.6 to 62.4
12	12	11.52 to 12.48
*3	3	2.88 to 3.12
	2.5	2.38 to 2.62
	2	1.88 to 2.12
	1.5	1.38 to 1.62
	1	0.88 to 1.12

*For TI models without a 3 VAC range marked on the RANGE switch, set to AC AMPS and read on AC AMPS scale.

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	200	180 to 220
R X 10	2,000	1,800 to 2,200
R X 100	20,000	18,000 to 22,000
R X 1 k	200,000	180,000 to 220,000

310-FET, 310-FET Type 2 (TRIPLETT) VOM

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.3, 1.2, 6, 30, 120, 600
	Accuracy: ±3% FS
DC Milliamperes	Ranges: 0 to 0.12, 1.2
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 12, 60, 300, 600
	Accuracy: ±4% FS
Resistance	Ranges: X 1, X 100, X 10 k, X 1 M Ranges (Type 2): 0 to 5 k, 500 k, 50 M,5000 M
	Accuracy: ±3% of DC scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (DCV)	Applied (DCV)	Limits (DCV)
600	600	582 to 618
120	120	116.4 to 123.6
30	30	29.1 to 30.9
6	6	5.82 to 6.18
	4	3.82 to 4.18
	2	1.82 to 2.18
1.2	1.2	1.164 to 1.236
0.3	0.3	0.291 to 0.309

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
1.2	1.2	1.164 to 1.236
	1.0	0.964 to 1.036
	0.8	0.764 to 0.836
	0.6	0.564 to 0.636
	0.4	0.364 to 0.436
	0.2	0.164 to 0.236
0.12	0.12	0.1164 to 0.1236

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (ACV)	Applied (ACV)	Limits (ACV)
300 (600 VAC input)	600	576 to 624
300 (V-O-M input)	300	288 to 312
60	60	57.6 to 62.4
12	12	11.52 to 12.48
	10	9.52 to 10.48
	8	7.52 to 8.48
	6	5.52 to 6.48
	4	3.52 to 4.48
	2	1.52 to 2.48
3	3	2.88 to 3.12

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
X 1	50	50 ±3% of DC arc
X 100	5 k	5 k ±3% of DC arc
X 10 k	500 k	500 k ±3% of DC arc
X 1 M	10 M	10 M ±3% of DC arc

RESISTANCE CALIBRATION (Type 2):

Range	Applied (Ω)	Limits (Ω)
0 to 5 k	4.5 k	4.5 k ±3% of DC scale length
500 k	450 k	450 k ±3% of DC scale length
50 M	10 M	10 M ±3% of DC scale length
5000 M	1 G1	1G ±3% of DC scale length

314 (SIMPSON) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 50 mV, 100 mV, 300 mV, 1 V, 3 V, 10 V, 30 V, 100 V, 300 V, 1000 V
	Accuracy: ±2% of FS
DC Current	Ranges: 10 µA, 100 µA, 1 mA, 10 mA, 100 mA, 1 A
	Accuracy: ±3% of FS
AC Volts	Ranges: 10 mV, 30 mV, 100 mV, 300 mV, 1 V, 3 V, 10 V, 30 V, 100 V, 300 V, 1000 V
	Accuracy: ±3% of FS
AC Current	Ranges: 10 µA, 100 µA, 1 mA, 10 mA, 100 mA, 1 A
	Accuracy: ±3% of FS
Resistance	Ranges: 0 to 1 GΩ (7 ranges)
	Accuracy: ±3° of arc
Frequency Response	Ranges: 3 V @ 30 Hz to 100 kHz
	Accuracy: ±3% of FS

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Probe	Applied	Limits
1000 V	X 1	1000 V	980 V to 1020 V
300 V		300 V	294 V to 306 V
100 V		100 V	98 V to 102 V
30 V		30 V	29.4 V to 30.6 V
10 V		10 V	9.8 V to 10.2 V
		8 V	7.8 V to 8.2 V
		6 V	5.8 V to 6.2 V
		4 V	3.8 V to 4.2 V
		2 V	1.8 V to 2.2 V

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range	Probe	Applied	Limits
3 V	X 1	3 V	2.94 V to 3.06 V
1 V		1 V	0.98 V to 1.02 V
300 mV		300 mV	294 mV to 306 mV
100 mV		100 mV	98 mV to 102 mV
50 mV		50 mV	49 mV to 51 mV

DC CURRENT CALIBRATION:

Range	Probe	Applied	Limits
1 A	X 1	1 A	0.97 A to 1.03 A
100 mA		100 mA	97 mA to 103 mA
10 mA		10 mA	9.7 mA to 10.3 mA
1 mA		1 mA	0.97 mA to 1.03 mA
100 µA		100 µA	97 µA to 103 µA
10 µA		10 µA	9.7 µA to 10.3 µA

AC VOLTS CALIBRATION:

Range	Probe	Applied	Limits
1000 V	X 1	1000 V	970 V to 1030 V
300 V		300 V	291 V to 309 V
100 V		100 V	97 V to 103 V
30 V		30 V	29.1 V to 30.9 V
10 V		10 V	9.7 V to 10.3 V
		8 V	7.7 V to 8.3 V
		6 V	5.7 V to 6.3 V
10 V		4 V	3.7 V to 4.3 V
		2 V	1.7 V to 2.3 V
3 V		3 V	2.91 V to 3.09 V
1 V		1 V	0.97 V to 1.03 V
300 mV		300 mV	291 mV to 309 mV
100 mV		100 mV	97 mV to 103 mV
30 mV		30 mV	29.1 mV to 30.9 mV
10 mV		10 mV	9.7 mV to 10.3 mV

CALIBRATION PERFORMANCE TABLE (Cont.)

AC CURRENT CALIBRATION:

Range	Probe	Applied	Limits
1 A	X 1	1 A	0.97 A to 1.03 A
100 mA		100 mA	97 mA to 103 mA
10 mA		10 mA	9.7 mA to 10.3 mA
1 mA		1 mA	0.97 mA to 1.03 mA
100 µA		100 µA	97 µA to 103 µA
10 µA		10 µA	9.7 µA to 10.3 µA

RESISTANCE CALIBRATION:

Range	Probe	Applied (Ω)	Limits*
R X 1	X 1	10	±3 div
R X 10		100	±3 div
R X 100		1 k	±3 div
R X 1 k		10 k	±3 div
R X 10 k		100 k	±3 div
R X 100 k		1 M	±3 div
R X 1 M		10 M	±3 div

*Limits are read from the center of the top scale on TI (5 ±3 div).

PROBE CALIBRATION:

Range	Probe	Applied	Limits
1 V	X 10	10 V	0.98 V to 1.02 V

FREQUENCY RESPONSE CALIBRATION:

Range	Probe	Applied	Limits
3 V	X 1	2.9 V @ 30 Hz to 100 kHz	2.81 V to 2.99 V

32 (METERS INC.) PORTABLE VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3.5, 7, 35, 140, 350, 700 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 7, 70 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 7, 35, 140, 350, 700 V
	Accuracy: ±5% FS
Resistance	Ranges: 20 M 0 to 20000 Ω 200 M 0 to 200,000 Ω 2 M 0 to 2 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
700	700	679 to 721
350	350	339.5 to 360.5
140	140	135.8 to 144.2
35	35	33.95 to 36.05
	25	23.95 to 26.05
	15	13.95 to 16.05
7	7	6.79 to 7.21
3.5	3.5	3.395 to 3.605

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
7	7	6.79 to 7.21
70	70	67.9 to 72.1

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
700	700	665 to 735
350	350	332.5 to 367.5
140	140	133 to 147
35	35	33.25 to 36.75
	25	23.25 to 26.75
	15	13.25 to 16.75
7	7	6.65 to 7.35

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
20 MΩ	20	18.7 to 21.5
200 MΩ	150	135 to 165
2 MΩ	1.5 k	1350 to 1650

3201 (YOKOGAWA ELECTRIC WORKS, LTD.) CIRCUIT TESTER
3204 (YOKOGAWA ELECTRIC WORKS, LTD.) DC SHUNT

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.3, 1.2, 3, 12, 30, 120, 300, 1200 V (with High Voltage PROBE) Accuracy: ±2% FS, 0.3 to 300 V range ±3% FS, 1200 V range
DC Current	Ranges: 0 to 0.012, 0.12, 1.2, 12, 120, 1200 mA, 12 A (with Shunt 3204) Accuracy: ±2% FS
AC Volts	Ranges: 0 to 3, 12, 30, 120, 300, 1200 V Accuracy: ±3% FS, 3 to 300 V range ±4% FS, 1200 V range
Resistance	Ranges: R X 1 0 to 2000 Ω R X 100 0 to 200,000 Ω R X 10 k 0 to 20 MΩ Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
12 kV *	1000	640 to 1360
1200	1200	1164 to 1236
1200	1000	964 to 1036
300	300	294 to 306
120	120	117.6 to 122.4
	100	97.6 to 102.4
	80	77.6 to 82.4
	60	57.6 to 62.4
	40	37.6 to 42.4
	20	17.6 to 22.4
30	30	29.4 to 30.6

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
12	12	11.76 to 12.24
3	3	2.94 to 3.06
1.2	1.2	1.176 to 1.224
0.3	0.3	0.294 to 0.306

* Use TI High Voltage Probe. Use the DC 1.2 V Range.

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
0.012	0.012	0.01176 to 0.01224
0.12	0.12	0.1176 to 0.1224
1.2	1.2	1.176 to 1.224
12	12	11.76 to 12.24
120	120	117.6 to 122.4
1200	1200	1176 to 1224
12 A *	12 A	11.76 to 12.24 A

* Use DC Shunt 3204 with TI range set to 0.012 DC mA.

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1000	952 to 1048
300	300	291 to 309
120	120	116.4 to 123.6
	100	96.4 to 103.6
	80	76.4 to 83.6
	60	56.4 to 63.6
	40	36.4 to 43.6
	20	16.4 to 23.6
30	30	29.1 to 30.9
12	12	11.64 to 12.36
3	3	2.91 to 3.09

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	10 ±3% of linear scale length
R X 100	1000	1000 ±3% of linear scale length
R X 10 k	100,000	100,000 ±3% of linear scale length

360 (B & K MANUFACTURING CO.) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 15, 60, 300, 1000, 6000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 100 µA 0 to 5, 100, 500 mA 0 to 10 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 15, 60, 300, 1000, 6000 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 1 k 0 to 1 MΩ R X 100 k 0 to 100 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1820	1640 to 2000
6000	1000	820 to 1180
1000	1000	970 to 1030
300	300	291 to 309
60	60	58.2 to 61.8
	50	48.2 to 51.8
	40	38.2 to 41.8
	30	28.2 to 31.8
	20	18.2 to 21.8
15	15	14.55 to 15.45
3	3	2.91 to 3.09

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
5 mA	5 mA	4.85 to 5.15 mA
100 µA	100 µA	97 to 103 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1000	700 to 1300
1000	1000	950 to 1050
300	300	285 to 315
60	60	57 to 63
	50	47 to 53
	40	37 to 43
	30	27 to 33
	20	17 to 23
15	15	14.25 to 15.75
3	3	2.85 to 3.15

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.7 to 11.5
R X 10	100	87 to 115
R X 1 k	10 k	8.7 k to 11.5
R X 100 k	1 M	0.87 M to 1.15 M

370-E (SANWA ELECTRIC INST. CO.) MULTITESTER VOM

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.5, 2.5, 10, 20, 250, 500, 1000, 5000 V Accuracy: ±3% FS, 0.5 to 1000 V Ranges ±10% FS, 5000 V Range
DC Current	Ranges: 0 to 50 µA 0 to 1, 10, 50, 250 mA 0 to 1, 10 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000 V Accuracy: ±5% FS, 2.5 V Range ±4% FS, 10 to 1000 V Ranges
AC Current	Ranges: 0 to 250 mA 0 to 1, 10 A Accuracy: ±6% FS
Resistance	Ranges: R X 1 0 to 5000 Ω R X 100 0 to 500,000 Ω R X 1000 0 to 5 MΩ R X 10,000 0 to 50 MΩ Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1500	1000 to 2000
5000	1000	500 to 1500
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
10	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575
0.5	0.5	0.485 to 0.515

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
1 A	1 A	0.97 to 1.03 A
250 mA	250 mA	242.5 to 257.5 mA
50 mA	50 mA	48.5 to 51.5 mA
10 mA	10 mA	9.7 to 10.3 mA
1 mA	1 mA	0.97 to 1.03 mA
50 µA	50 µA	48.5 to 51.5 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
2.5	2.5	2.375 to 2.625

CALIBRATION PERFORMANCE TABLE (Cont.)

AC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.4 to 10.6 A
1 A	1 A	0.94 to 1.06 A
250 mA	250 mA	235 to 265 mA

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	80	80 ±3% of linear scale length
R X 100	8000	8000 ±3% of linear scale length
R X 1,000	80,000	80,000 ±3% of linear scale length
R X 10,000	800,000	800,000 ±3% of linear scale length

445 (HICKOK) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 25, 100, 250, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 10, 100, 1000 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 25, 100, 250, 1000 V
	Accuracy: ±4% FS
AC Current	Ranges: 0 to 10, 100, 1000 mA
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 100 0 to 100,000 Ω R X 10 k 0 to 1 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
250	250	242.5 to 257.5
100	100	97 to 103
25	25	24.25 to 25.75
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
1000	1000	970 to 1030
100	100	97 to 103
10	10	9.7 to 10.3

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
250	250	240 to 260
100	100	96 to 104
25	25	24 to 26
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
2.5	2.5	2.4 to 2.6

AC CURRENT CALIBRATION:

Range (mV)	Applied (mV)	Limits (mV)
1000	1000	960 to 1040
100	100	96 to 104
10	10	9.6 to 10.4

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	100	100 ±3% of linear scale length
R X 100	1000	1000 ±3% of linear scale length
R X 10,000	10,000	10,000 ±3% of linear scale length

452, 520600 (SEARS) MULTITESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.25, 1, 2.5, 10, 25, 100, 250, 1000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 10, 100, 1000 mA
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 50, 500 µA, 5, 50, 500 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 25, 100, 250, 1000 V
	Accuracy: ±4% FS
Decibels	Ranges: -22 to 62 dB
	Accuracy: ±4% FS
Resistance	Ranges:
	R X 1 0 to 6 kΩ (30 Ω center) R X 10 0 to 60 kΩ (300 Ω center) R X 100 0 to 600 kΩ (3 kΩ center) R X k 0 to 6 MΩ (30 kΩ center)
	Accuracy: ±3% of scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
1000	1000	970 to 1030
250	250	242.5 to 257.5
100	100	97 to 103
25	25	24.25 to 25.75
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575
1	1	0.97 to 1.03
0.25	0.25	0.2425 to 0.2575

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied (A)	Limits (A)
50 µA	50 µA	48.5 to 51.5 µA
500 µA	500 µA	485 to 515 µA
5 mA	5 mA	4.85 to 5.15 mA
50 mA	50 mA	48.5 to 51.5 mA
500 mA	500 mA	485 to 515 mA

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
1000	1000	960 to 1040
250	250	240 to 260
100	100	96 to 104
25	25	24 to 26
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4

DECIBELS CALIBRATION:

Calibrated during AC Voltage Calibration.

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	30	27 to 34
R X 10	300	270 to 340
R X 100	3 k	2.7 to 3.4 k
R X 1 k	30 k	27 to 34 k

455A VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 15, 60, 150, 600, 1200 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 50 μA; 0 to 1, 10, 100, 1000 mA; 0 to 10 A
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 3, 15, 60, 150, 600, 1200 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 100 0 to 100,000 Ω R X 1 k 0 to 1 MΩ R X 100 k 0 to 100 MΩ
	Accuracy: ±1 linear DC scale division

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1200	1176 to 1224
1200	1000	976 to 1024
600	600	588 to 612
150	150	147 to 153
60	60	58.8 to 61.2
	50	48.8 to 51.2
	40	38.8 to 41.2
	30	28.8 to 31.2
	20	18.8 to 21.2
15	15	14.7 to 15.3
3	3	2.94 to 3.06

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.8 to 10.2 A
1000 mA	1000 mA	980 to 1020 mA
100 mA	100 mA	98 to 102 mA
10 mA	10 mA	9.8 to 10.2 mA
1 mA	1 mA	0.98 to 1.02 mA
50 µA	50 µA	49 to 51 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1000	940 to 1060
600	600	570 to 630
150	150	142.5 to 157.5
60	60	57 to 63
	50	47 to 53
	40	37 to 43
	30	27 to 33
	20	17 to 23
15	15	14.25 to 15.75
3	3	2.85 to 3.15

456 (R D INSTRUMENTS, HICKOK) VOLT-OHM-MILLIAMMETER)

TI Characteristics	Performance Specifications	
DC Volts	Ranges: 0 to 3, 15, 60, 150, 600, 1200 V	
	Accuracy: ±2% FS	
DC Current	Ranges: 0 to 50 µA 0 to 1, 10, 100, 1000 mA 0 to 10 A	
	Accuracy: ±2% FS	
AC Volts	Ranges: 0 to 3, 15, 60, 150, 600, 1200 V	
	Accuracy: ±3% FS	
Resistance	Ranges:	
	R X 1	0 to 1000 Ω
	R X 100	0 to 100,000 Ω
	R X 1 k	0 to 1 MΩ
	R X 100 k	0 to 100 MΩ
Accuracy: ±1 linear DC scale division		

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1200	1176 to 1224
1200	1000	976 to 1024
600	600	588 to 612
150	150	147 to 153
60	60	58.8 to 61.2
	50	48.8 to 51.2
	40	38.8 to 41.2
	30	28.8 to 31.2
	20	18.8 to 21.2
15	15	14.7 to 15.3
3	3	2.94 to 3.06

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.8 to 10.2 A
1000 mA	1000 mA	980 to 1020 mA
100 mA	100 mA	98 to 102 mA
10 mA	10 mA	9.8 to 10.2 mA
1 mA	1 mA	0.98 to 1.02 mA
50 µA	50 µA	49 to 51 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1000	964 to 1036
600	600	582 to 618
150	150	145.5 to 154.5
60	60	58.2 to 61.8
	50	48.2 to 51.8
	40	38.2 to 41.8
	30	28.2 to 31.8
	20	18.2 to 21.8
15	15	14.55 to 15.45
3	3	2.91 to 3.09

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 10.5
R X 100	1 k	950 to 1050
R X 1 k	10 k	9.5 k to 10.5 k
R X 100 k	1 M	950 k to 1.05 M

461AP (RADIO CITY PRODUCTS) ULTRA SENSITIVE MULTITESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 100 μA 0 to 10, 100, 500 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 100 0 to 100,000 Ω R X 10,000 0 to 10 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1850	1700 to 2000
5000	1000	850 to 1150
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

DC CURRENT CALIBRATION:

Range	Applied	Limits
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION: (Cont.)

Range	Applied	Limits
10 mA	10 mA	9.7 to 10.3 mA
100 µA	100 µA	97 to 103 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	800 to 1200
1000	1000	960 to 1040
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4
2.5	2.5	2.4 to 2.6

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.7 to 11.5
R X 100	1 k	870 to 1150
R X 10 k	100 k	87 k to 115 k

50 (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.3, 3, 30, 300, 600
	Accuracy: ±3% of FS
AC Volts	Ranges: 0 to 3, 30, 300, 600
	Accuracy: ±4% of FS
DC Current	Ranges: 0 to 300 mA
	Accuracy: ±3% of FS
Resistance	Ranges: R X 1, R X 1 k
	Accuracy: ±3% of scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
600	550	532 to 568
	300	291 to 309
	200	191 to 209
	100	91 to 109
30	30	29.1 to 30.9
3	3	2.91 to 3.09
0.3	0.3	0.291 to 0.309

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
600	550	526 to 674
300	300	288 to 312
	200	188 to 212
	100	88 to 112
30	30	28.8 to 31.2
3	3	2.88 to 3.12

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION

Range (mA)	Applied (mA)	Limits (mA)
300	300	291 to 309
	200	191 to 209
	100	91 to 109

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	20	18 to 20
R X 1 k	20 k	18 to 20 k

526A & 536A (EICO) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1, 5, 10, 100, 500, 5000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 1, 10, 100, 1000 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 1, 5, 10, 50, 100, 500, 5000 V
	Accuracy: ±5% FS
AC Current	Ranges: 0 to 1, 10, 100, 1000 mA
	Accuracy: ±5% FS
Resistance	Ranges: LO OHMS 55 Ω Center scale R X 1 150 Ω Center scale R X 10 1500 Ω Center scale
	Accuracy: ±1% of linear scale length at center scale

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1850	1700 to 2000
5000	1000	850 to 1150
500	500	485 to 515
100	100	97 to 103
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
5	5	4.85 to 5.15
1	1	0.97 to 1.03

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
1000	1000	970 to 1030
100	100	97 to 103
10	10	9.7 to 10.3
1	1	0.97 to 1.03

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	750 to 1250
500	500	475 to 525
100	100	95 to 105
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
5	5	4.75 to 5.25
1	1	0.95 to 1.05

AC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
1000	1000	950 to 1050
100	100	95 to 105
10	10	9.5 to 10.5
1	1	0.95 to 1.05

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
LO OHMS	55	51 to 59
R X 1	150	135 to 165
R X 10	1500	1350 to 1650

555A (PHAOSTRON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.5, 5, 15, 50, 150, 500, 1500 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 50, 150, 500 µA 0 to 1.5, 5, 15, 50, 150, 500, 1500 mA 0 to 15 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 1.5, 5, 15, 50, 150, 500, 1500 V
	Accuracy: ±4% FS
AC Current	Ranges: 0 to 1.5, 5, 15, 50, 150, 500, 1500 mA; 0 to 15 A
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 100 0 to 100,000 Ω R X 1 k 0 to 1 MΩ R X 10 k 0 to 10 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1500	1500	1455 to 1545
1500	1000	955 to 1045
500	500	485 to 515
150	150	145.5 to 154.5
50	50	48.5 to 51.5
15	15	14.55 to 15.45
5	5	4.85 to 5.15
	4	3.85 to 4.15
	3	2.85 to 3.15

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
5	2	1.85 to 2.15
	1	0.85 to 1.15
1.5	1.5	1.455 to 1.545

DC CURRENT CALIBRATION:

Range	Applied	Limits
15 A	15 A	14.55 to 15.45 A
1500 mA	1500 mA	1455 to 1545 mA
500 mA	500 mA	485 to 515 mA
150 mA	150 mA	145.5 to 154.5 mA
50 mA	50 mA	48.5 to 51.5 mA
15 mA	15 mA	14.55 to 15.45 mA
5 mA	5 mA	4.85 to 5.15 mA
1.5 mA	1.5 mA	1.455 to 1.545 mA
500 µA	500 µA	485 to 515 µA
150 µA	150 µA	145.5 to 154.5 µA
50 µA	50 µA	48.5 to 51.5 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1500	1000	940 to 1060
500	500	480 to 520
150	150	144 to 156
50	50	48 to 52
15	15	14.4 to 15.6
5	5	4.8 to 5.2
	4	3.8 to 4.2
	3	2.8 to 3.2
	2	1.8 to 2.2
	1	0.8 to 1.2
1.5	1.5	1.44 to 1.56

CALIBRATION PERFORMANCE TABLE (Cont.)

AC CURRENT CALIBRATION:

Range	Applied	Limits
15 A	15 A	14.4 to 15.6 A
1500 mA	1500 mA	1440 to 1560 mA
500 mA	500 mA	480 to 520 mA
150 mA	150 mA	144 to 156 mA
50 mA	50 mA	48 to 52 mA
15 mA	15 mA	14.4 to 15.6 mA
5 mA	5 mA	4.8 to 5.2 mA
1.5 mA	1.5 mA	1.44 to 1.56 mA

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	20	20 ±3% of linear scale length
R X 100	2,000	2,000 ±3% of linear scale length
R X 1 k	20,000	20,000 ±3% of linear scale length
R X 10 k	200,000	200,000 ±3% of linear scale length

564 (WESTON) VOLT-OHMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 30, 300, 600 V
	Accuracy: ±2% FS
Resistance	Ranges: R 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100,000 Ω R X 1000 0 to 1,000,000 Ω
	Accuracy: ±2% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
600	600	588 to 612
300	300	294 to 306
30	30	29.4 to 30.6
	25	24.4 to 25.6
	20	19.4 to 20.6
	15	14.4 to 15.6
	10	9.4 to 10.6
3	3	2.94 to 3.06

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R	40	40 ±2% of linear scale length
R X 10	400	400 ±2% of linear scale length
R X 100	4,000	4,000 ±2% of linear scale length
R X 1000	40,000	40,000 ±2% of linear scale length

600 TYPE 2 (TRIPLETT) VOLT-OHMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.4, 0.8, 1.6, 4, 8, 16, 40, 160, 400, 1600 V
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 4, 8, 16, 40, 160, 400, 800 V
	Accuracy: ±3% FS with a 60 cycle sine wave source
Resistance	Ranges: R X 1 — 0 to 1,000 Ω R X 10 — 0 to 10,000 Ω R X 100 — 0 to 100,000 Ω R X 1 k — 0 to 1 MΩ R X 10 k — 0 to 10 MΩ R X 100 k — 0 to 100 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (VDC)	Applied (VDC)	Limits (VDC)
1600	1600	1552 to 1648
1600	1000	952 to 1048
400	400	388 to 412
160	160	155.2 to 164.8
40	40	38.8 to 41.2
16	16	15.52 to 16.48
8	8	7.76 to 8.24
4	4	3.88 to 4.12
	3	2.88 to 3.12
	2	1.88 to 2.12
	1	0.88 to 1.12
1.6	1.6	1.552 to 1.648
0.8	0.8	0.776 to 0.824
0.4	0.4	0.388 to 0.412

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
800	800	776 to 824
400	400	388 to 412
160	160	155.2 to 164.8
40	40	38.8 to 41.2
16	16	15.52 to 16.48
8	8	7.76 to 8.24
4	4	3.88 to 4.12
	3	2.88 to 3.12
	2	1.88 to 2.12
	1	0.88 to 1.12

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.7 to 11.5
R X 10	100	87 to 115
R X 100	1 k	870 to 1150
R X 1 k	10 k	8.7 k to 11.5 k
R X 10 k	100 k	87 k to 115 k
R X 100 k	1 M	870 k to 1.15 M

600T860 (XEROX) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 1.5, 6, 15, 30, 60, 150, 300, 600, 1500, 3000 and 6000 V
	Accuracy: ±2% FS on 1.5 V to 600 V ranges; ±3% FS on 1500 V range; ±4% FS on 3000 V to 6000 V range
AC Volts	Ranges: 1.5, 15, 30, 60, 150, 300, 600 and 3000 V
	Accuracy: ±3% FS on 1.5 to 600 V ranges; ±5% FS on 3000 V range @ 400 Hz
DC Current	Ranges: 30 µA, 60 µA, 150 µA, 300 µA, 600 µA, 6 mA, 60 mA and 150 mA
	Accuracy: ±2% FS all ranges
AC Current	Ranges: 30 µA, 60 µA, 150 µA, 300 µA, 600 µA
	Accuracy: ±3% FS all ranges
Resistance	Ranges: 1,000 Ω, 10,000 Ω, 100,000 Ω and 1,000,000 Ω
	Accuracy: ±3% (@ center scale) all ranges

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1.5	1.5	1.47 to 1.53
6	6	5.88 to 6.12
15	15	14.7 to 15.3
30	30	29.4 to 30.6
	20	19.4 to 20.6
	15	14.4 to 15.6
	10	9.4 to 10.6
	5	4.4 to 5.6

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
60	60	58.8 to 61.2
150	150	147 to 153
300	300	294 to 306
600	600	588 to 612
1500 HV Jacks	1500	1455 to 1545
1500	1000	955 to 1045
3000 HV Jacks	1500	1380 to 1620
6000 HV Jacks	1500	1260 to 1740

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
1.5	1.5 @ 400 Hz	1.45 to 1.55
15	15 @ 400 Hz	14.5 to 15.45
30	30 @ 400 Hz	29.1 to 30.9
60	60 @ 400 Hz	58.2 to 61.8
150	150 @ 400 Hz	145.5 to 154.5
300	300 @ 400 Hz	291 to 309
600	600 @ 400 Hz	582 to 618
3000 HV Jacks	1000 @ 400 Hz	925 to 1075

DC CURRENT CALIBRATION:

Range	Applied (A)	Limits (A)
30 µA	30 µA	29.4 to 30.6 µA
60 µA	60 µA	58.8 to 61.2 µA
150 µA	150 µA	147.0 to 153.0 µA
300 µA	300 µA	294 to 306 µA
600 µA	600 µA	588 to 612 µA
6 mA	6 mA	5.88 to 6.12 mA
60 mA	60 mA	58.8 to 61.2 mA
150 mA	150 mA	147 to 153 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

AC CURRENT CALIBRATION:

Range	Applied (A)	Limits (A)
30 µA	30 µA	29.1 to 30.9 µA
60 µA	60 µA	58.2 to 61.8 µA
150 µA	150 µA	145.5 to 154.5 µA
300 µA	300 µA	291 to 309 µA
600 µA	600 µA	582 to 618 µA

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
X 1	30	29.1 to 30.9
X 10	300	291 to 309
X 100	3 k	2.91 to 3.09 k
X 1000	30 k	29.1 to 30.9 k

616-A (ATLAS) MULTIMETER

TI Characteristics	Performance * Specifications
DC Volts	Range: 0 to 6, 60, 300, 600 V
	Accuracy: ±2% FS
DC Millivolts	Range: 120 mV
	Accuracy: ±2% FS
AC Volts	Range: 0 to 6, 60, 300, 600 V
	Accuracy: ±3% FS @ 60 Hz
AC Millivolts	Range: 120 mV
	Accuracy: ±3% FS @ 60 Hz
Resistance	Ranges: R X 1 R X 10 R X 100 R X 1000
	Accuracy: ±2% of scale length (4 inches)
Current Shunt	Range: 1 Ω
	Accuracy: Functional Test

* Operating position is horizontal (TI laying flat on back of case).

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (VDC)	Limits (VDC)
600	540	528 to 552
	420	408 to 432
	180	168 to 192
300	270	264 to 276
60	54	52.8 to 55.2
6	5.4	5.28 to 5.52
120 m	108 m	105.6 to 110.4 m
	84 m	81.6 to 86.4 m
	36 m	33.6 to 38.4 m

CALIBRATION PERFORMANCE TABLE *(Cont.)*

AC VOLTS CALIBRATION:

Range (V)	Applied (VAC)	Limits (VAC)
600	540 @ 60 Hz	522 to 558
300	270 @ 60 Hz	261 to 279
60	54 @ 60 Hz	52.2 to 55.8
6	5.4 @ 60 Hz	5.22 to 5.58
120 m	108 m @ 60 Hz	104.4 to 111.6 m

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits
X 1	40	2% of ARC (1/12.5) inch
X 10	400	2% of ARC (1/12.5) inch
X 100	4 k	2% of ARC (1/12.5) inch
X 1000	40 k	2% of ARC (1/12.5) inch

CURRENT SHUNT FUNCTIONAL TEST:

* Connect Digital Multimeter across TI test leads and set Range selector switch to either 120 mVAC or 120 mVDC. Press and hold the TI STRAY CURRENT TEST button. Digital Multimeter should indicate about 1 Ω.

620, 621 (BARNETT INST) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications	
DC Volts	Ranges: 0 to 10, 50, 250, 1000, 5000 V	
	Accuracy: ±3% FS	
DC Current	Ranges: 0 to 10, 100, 500 mA	
	Accuracy: ±3% FS	
AC Volts	Ranges: 0 to 10, 50, 250, 1000, 5000 V	
	Accuracy: ±5% FS	
Resistance	Ranges:	
	LO - OHMS	0 to 2000 Ω
	HI - OHMS	0 to 400,000 Ω
	Accuracy: ±3% of linear scale length	

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1850	1700 to 2000
5000	1000	850 to 1150
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
500	500	485 to 515
100	100	97 to 103
10	10	9.7 to 10.3

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	750 to 1250
1000	1000	950 to 1050
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
LO - OHMS	10	8.7 to 11.5
HI - OHMS	1 k	870 to 1150

625NA (TRIPLETT) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts divided by 2	Ranges: 0 to 1.25, 5, 25, 125, 500, 2500 V
	Accuracy: ±3% FS
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 50 µA 0 to 1, 10, 100, 1000 mA 0 to 10 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±5% FS
Resistance	Ranges:
	2 k 0 to 2000 Ω 200 k 0 to 200,000 Ω 40 M 0 to 40 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS DIVIDED BY 2 CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1925	1850 to 2000
5000	1000	925 to 1075
1000	500	485 to 515
250	125	121.25 to 128.75
50	25	24.25 to 25.75
10	5	4.85 to 5.15
	4	3.85 to 4.15
	3	2.85 to 3.15
	2	1.85 to 2.15
	2	0.85 to 1.15
2.5	1.25	1.2125 to 1.2875

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1850	1700 to 2000
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A
1000 mA	1000 mA	970 to 1030 mA
100 mA	100 mA	97 to 103 mA
10 mA	10 mA	9.7 to 10.3 mA
1 mA	1 mA	0.97 to 10.3 mA
50 µA	50 µA	48.5 to 51.5 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	750 to 1250
1000	1000	950 to 1050
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.425 to 2.575

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
2 k	10	10 ±3% of linear scale length
200 k	1200	1200 ±3% of linear scale
40 M	240,000	240,000 ±3% of linear scale length

630 (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 12, 60, 300, 1200, 6000 V Accuracy: ±3% FS, 3 through 1200 V Ranges ±5% FS, 6000 V Range
DC Current	Range: 0 to 60 μA, 1.2, 12, 120 mA, 12 A Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 12, 60, 300, 1200, 6000 V Accuracy: ±4% FS, 3 through 1200 V Ranges ±5% FS, 6000 V Range
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 1,000 0 to 1 MΩ R X 100,000 0 to 100 MΩ Accuracy: ±3% of linear scale

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1760	1460 to 2060
1200	1200	1164 to 1236
1200	1000	964 to 1036
300	300	291 to 309
60	60	58.2 to 61.8
12	12	11.64 to 12.36
3	3	2.91 to 3.09
	2.5	2.41 to 2.59
	2	1.91 to 2.09
	1.5	1.41 to 1.59
	1	0.91 to 1.09

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
12 A	12 A	11.6 to 12.4 A
120 mA	120 mA	116 to 124 mA
12 mA	12 mA	11.6 to 12.4 mA
1.2 mA	1.2 mA	1.16 to 1.24 mA
60 µA	60 µA	58.2 to 61.8 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1000	700 to 1300
1200	1000	952 to 1048
300	300	288 to 312
60	60	57.6 to 62.4
12	12	11.52 to 12.48
3	3	2.88 to 3.12
	2.5	2.38 to 2.62
	2	1.88 to 2.12
	1.5	1.38 to 1.62
	1	0.88 to 1.12

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.5 to 11.7
R X 10	100	85 to 117
R X 1 k	10 k	8.5 k to 11.7 k
R X 100 k	1 M	850 k to 1.17 M

630 TYPE 2, 630 TYPE 3 (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 12, 60, 300, 1200, 6000 V Accuracy: ±4% FS, 6000 V Range ±2% FS, 3 through 1200 V Ranges
DC Current	Ranges: 0 to 60 μA 0 to 1.2, 12, 120 mA 0 to 12 A, 0 to 1.2 A Accuracy: ±2% FS
AC Volts	Ranges: 0 to 3, 12, 60, 300, 1200, 6000 V Accuracy: ±3% FS, 3 to 1200 V Ranges ±5% FS, 6000 V Range
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 1,000 0 to 1 MΩ R X 100,000 0 to 100 MΩ Accuracy: ±2% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1760	1520 to 2000
1200	1200	1176 to 1224
1200	1000	976 to 1024
300	300	294 to 306
60	60	58.8 to 61.2
12	12	11.76 to 12.24
3	3	2.94 to 3.06
	2.5	2.44 to 2.56
	2	1.94 to 2.06
	1.5	1.44 to 1.56
	1	0.94 to 1.06

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
1.2 A	1.2 A	1.18 to 1.22 A
12 A	12 A	11.76 to 12.24 A
120 mA	120 mA	117.6 to 122.4 mA
12 mA	12 mA	11.76 to 12.24 mA
1.2 mA	1.2 mA	1.176 to 1.224 mA
60 µA	60 µA	58.8 to 61.2 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1000	700 to 1300
1200	1000	964 to 1036
300	300	291 to 309
60	60	58.2 to 61.8
12	12	11.64 to 12.36
3	3	2.91 to 3.09
	2.5	2.41 to 2.59
	2	1.91 to 2.09
	1.5	1.41 to 1.59
	1	0.91 to 1.09

RESISTANCE CALIBRATION: (pre 1965)

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.7 to 11.5
R X 10	100	87 to 115
R X 1 k	10 k	8.7 k to 11.5 k
R X 100 k	1 M	870 k to 1.15 M

RESISTANCE CALIBRATION: (past 1965)

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.1 to 11.0
R X 10	100	91 to 110
R X 1 k	10 k	9.1 k to 11 k
R X 100 k	1 M	910 k to 1.1 M

630 TYPE 4 (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.3, 3, 12, 30, 300, 600 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 0.06, 1.2, 12, 120 mA
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 3, 12, 60, 300, 600 V
	Accuracy: ±3% FS
Resistance	Ranges: R X 1 0 to 1 kΩ R X 10 0 to 10 kΩ R X 100 0 to 100 kΩ R X 1000 0 to 1 MΩ R X 100 k 0 to 100 MΩ
	Accuracy: ±2% of scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
600	600	588 to 612
300	300	294 to 306
60	60	59 to 61
12	12	11.76 to 12.24
3	3	2.94 to 3.06
	2.5	2.44 to 2.56
	2	1.94 to 2.06
	1.5	1.44 to 1.56
	1	0.94 to 1.06
0.3	0.3	0.294 to 0.306

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
120	120	117.6 to 122.4

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION: (Cont.)

Range (mA)	Applied (mA)	Limits (mA)
12	12	11.76 to 12.24
1.2	1.2	1.18 to 1.22
0.06	0.06	0.059 to 0.061

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
600	600	582 to 612
300	300	291 to 309
60	60	58.2 to 61.8
12	12	11.64 to 12.36
3 AC/AMPS scale	3	2.91 to 3.09
	2.5	2.41 to 2.59
	2	1.91 to 2.09
	1	0.91 to 1.09

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.5 to 11
R X 10	100	95 to 110
R X 100	1 k	950 to 1100
R X 1000	10 k	9.5 to 11 k
R X 100,000	1 M	950 k to 1.1 M

630 A TYPE 3 (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.3, 3, 12, 60, 300, 600, 1200 and 6000 V Accuracy: 6000 V Range ±3.5% FS All other ranges ±1.5% FS
DC Current	Ranges: 0 to 60 μA 0 to 1.2, 12 and 120 mA 0 to 12 A Accuracy: ±1.5% FS
AC Volts	Ranges: 0 to 3, 12, 60, 300, 600, 1200 and 6000 V Accuracy: 6000 V Range ±5% FS All other Ranges ±3% FS
Resistance	Ranges: R X 1 0 to 1 kΩ R X 10 0 to 10 kΩ R X 100 0 to 100 kΩ R X 1 k 0 to 1 MΩ R X 100 k 0 to 100 MΩ Accuracy: ±1.5% scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1760	1550 to 1970
1200	1200	1182 to 1218
1200	1000	982 to 1018
600	600	591 to 609
300	300	295.5 to 304.5
60	60	59.1 to 60.9
12	12	11.82 to 12.18
3	3	2.955 to 3.045
	2.5	2.455 to 2.545
	2	1.955 to 2.045

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
3	1.5	1.455 to 1.545
	1	0.955 to 1.045
0.3	0.3	0.295 to 0.305

DC CURRENT CALIBRATION:

Range	Applied	Limits
12 A	12 A	11.82 to 12.18 A
120 mA	120 mA	118.2 to 121.8 mA
12 mA	12 mA	11.82 to 12.18 mA
1.2 mA	1.2 mA	1.182 to 1.218 mA
60 µA	60 µA	59.1 to 60.9 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
6000	1000	700 to 1300
1200	1000	964 to 1036
600	600	582 to 618
300	300	291 to 309
60	60	58.2 to 61.8
12	12	11.64 to 12.36
3	3	2.91 to 3.09

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	10 ±1.5% scale length
R X 10	100	100 ±1.5% scale length
R X 100	1 k	1 k ±1.5% scale length
R X 1 k	10 k	10 k ±1.5% scale length
R X 100 k	1 M	1 M ±1.5% scale length

630 L (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 100 µA 0 to 10, 100, 1000 mA 0 to 10 A
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 3, 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 1 k 0 to 1 MΩ R X 100 k 0 to 100 MΩ
	Accuracy: ±2% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1900	1800 to 2000
5000	1000	900 to 1100
1000	1000	980 to 1020
250	250	245 to 255
50	50	49 to 51
10	10	9.8 to 10.2
	8	7.8 to 8.2
	6	5.8 to 6.2
	4	3.8 to 4.2
	2	1.8 to 2.2
2.5	2.5	2.45 to 2.55

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.8 to 10.2 A
1000 mA	1000 mA	980 to 1020 mA
100 mA	100 mA	98 to 102 mA
10 mA	10 mA	9.8 to 10.2 mA
100 µA	100 µA	98 to 102 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	750 to 1250
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
3	3	2.91 to 3.09

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9 to 11
R X 10	100	90 to 110
R X 1 k	10 k	9 k to 1.1 k
R X 100 k	1 M	0.9 M to 1.1 M

630 PL, 630 PLK (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.250, 2.5, 5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±2% FS, 2.5 to 1000 V Ranges 630 PL ±4% FS, 5000 V Range ±2% FS, 0.250 to 1000 V Ranges 630 PLK
DC Current	Ranges: 0 to 100 µA 0 to 10, 100, 1000 mA 0 to 10 A
	Accuracy: ±2% FS 630 PL ±3% FS 630 PLK
AC Volts	Ranges: 0 to 3, 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% FS, 3 to 1000 V Ranges ±5% FS, 5000 V Range @ 60 Hz 630 PL ±4% FS, 5000 V Range 630 PLK
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10000 Ω R X 1 k 0 to 1 MΩ R X 100 k 0 to 10 MΩ
	Accuracy: ±2% of Linear Scale Length 630 PL ±3% of linear scale length 630 PLK ±1.5 divisions on linear DCV scale

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)	Taut Band
5000 *	1750	1550 to 1950	
	1800		1600 to 2000
1000	1000	980 to 1020	980 to 1020
250	250	245 to 255	245 to 255

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)	Taut Band
50	50	49 to 51	49 to 51
10	10	9.8 to 10.2	9.8 to 10.2
	8	7.8 to 8.2	7.8 to 8.2
	6	5.8 to 6.2	5.8 to 6.2
	4	3.8 to 4.2	3.8 to 4.2
	2	1.8 to 2.2	1.8 to 2.2
2.5	2.5	2.45 to 2.55	2.45 to 2.55

* Not available on modified 630 - PLK.

DC CURRENT CALIBRATION:

Range	Applied	Limits	Taut Band
10 A	10 A	9.8 to 10.2 A	9.8 to 10.2 A
1000 mA	1000 mA	980 to 1020 mA	980 to 1020 mA
100 mA	100 mA	98 to 102 mA	98 to 102 mA
10 mA	10 mA	9.8 to 10.2 mA	9.8 to 10.2 mA
100 µA	100 µA	98 to 102 µA	98 to 102 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)	Taut Band
5000 *	1000	750 to 1250	
	1000		800 to 1200
1000	1000	970 to 1030	970 to 1030
250	250	242.5 to 257.5	242.5 to 257.5
50	50	48.5 to 51.5	48.5 to 51.5
10	10	9.7 to 10.3	9.7 to 10.3
3	3	2.91 to 3.09	2.91 to 3.09
	2.5	2.41 to 2.59	2.41 to 2.59
	2	1.91 to 2.09	1.91 to 2.09
	1.5	1.41 to 1.59	1.41 to 1.59
	1	0.91 to 1.09	0.91 to 1.09

* Not available on modified 630 - PLK.

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION: (regular)

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9 to 11
R X 10	100	90 to 110
R X 1 k	10 k	9 k to 11 k
R X 100 k	1 M	0.9 M to 1.1 M

RESISTANCE CALIBRATION: (taut)

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.3 to 12
R X 10	100	83 to 120
R X 1 k	10 k	8.3 k to 12 k
R X 100 k	1 M	0.83 M to 1.2 M

630 PLK TYPE 6, 7 (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 250 mV, 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±2% of full scale all ranges except 5000 V range which is ±4% of full scale
DC Current	Ranges: 0 to 100 µA, 10, 100, 1000 mA, 10 A
	Accuracy: ±2% of full scale
AC Volts	Ranges: 0 to 3, 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% of full scale all ranges except 5000 V which is ±5% of full scale @ 60 Hz
Resistance	Ranges: R X 1, R X 10, R X 1 k, R X 100 k
	Accuracy: ±2% of scale length

CALIBRATION PERFORMANCE TABLE

OVERLOAD CALIBRATION:

Connect TI to the Meter Calibrator and perform the following: (Monitor voltage output.)

Function	Range	Applied	Limits
DC Volts	2.5 V	10 to 15 VDC	OL

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000 (Type 6 only) **	1800	1600 to 2000
5000	1000	800 to 1200
1000	1000	980 to 1020
250	250	245 to 255
50	50	49 to 51

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
10	10	9.8 to 10.2
	8	7.8 to 8.2
	6	5.8 to 6.2
	4	3.8 to 4.2
	2	1.8 to 2.2
2.5	2.5	2.45 to 2.55
250 mV*	250 mV	245 to 255 mV

* Set Range switch to 100 µA

** Not available on modified 630 - PLK

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.8 to 10.2 A
1000 mA	1000 mA	980 to 1020 mA
100 mA	100 mA	98 to 102 mA
10 mA	10 mA	9.8 to 10.2 mA
100 µA	100 µA	98 to 102 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000 (Type 6 only) *	1000	750 to 1250
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
3	3	2.91 to 3.09

* Not available on modified 630 - PLK

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.3 to 12
R X 10	100	83 to 120
R X 1 k	10 k	8.3 to 12 k
R X 100 k	1 M	0.83 to 1.2 M

630-T (TRIPLETT) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.3, 3, 12, 60, 300, 600 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 60 µA 0 to 1.2, 12, 120 mA
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 3, 12, 60, 300, 600
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 — 0 to 1000 Ω R X 10 — 0 to 10,000 Ω R X 100 — 0 to 100,000 Ω R X 1000 — 0 to 1 MΩ R X 10,000 — 0 to 10 MΩ
	Accuracy: ±2% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
600	600	588 to 612
300	300	294 to 306
60	60	58.8 to 61.2
12	12	11.76 to 12.24
3	3	2.94 to 3.06
	2.5	2.44 to 2.56
	2	1.94 to 2.06
	1.5	1.44 to 1.56
	1	0.94 to 1.06
0.3	0.3	0.294 to 0.306

DC CURRENT CALIBRATION:

Range	Applied	Limits
120 mA	120 mA	117.6 to 122.4 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION: (Cont.)

Range	Applied	Limits
12 mA	12 mA	11.76 to 12.24 mA
1.2 mA	1.2 mA	1.176 to 1.224 mA
60 µA	60 µA	58.8 to 61.2 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
600	600	570 to 630
300	300	285 to 315
60	60	57 to 63
12	12	11.4 to 12.6
3	3	2.85 to 3.15
	2.5	2.35 to 2.65
	2	1.85 to 2.15
	1.5	1.35 to 1.65
	1	0.85 to 1.15

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	20	18.5 to 22
R X 10	200	185 to 220
R X 100	2 k	185 to 2200
R X 1 k	20 k	18.5 to 22 k
R X 10 k	200 k	185 k to 220 k

663 (WESTON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0.25 to 500 V
	Accuracy: ±1% FS; 1000 V, ±1.5% FS; 5000 V, ±2% FS
DC Current	Ranges: 0.05 mA to 10 A
	Accuracy: ±1% FS
AC Volts	Ranges: 2.5 to 500 V
	Accuracy: ±2% FS; 1000 V, ±2.5% FS; 5000 V, ±2% FS
Resistance	Ranges: X 1
	Accuracy: ±1.5° at center scale X 10 to X 10 k, ±1° at center scale

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
0.25	0.25	0.2475 to 0.2525
2.5	2.5	2.475 to 2.525
10	±10	9.9 to 10.1
	±8	7.9 to 8.1
	±6	5.9 to 6.1
	±4	3.9 to 4.1
	±2	1.9 to 2.1
50	50	49.5 to 50.5
250	250	247.5 to 252.5
500	500	495 to 505
1000	1000	985 to 1015
5000	1900	1800 to 2000
5000	1000	900 to 1100

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
0.05 mA	0.05 mA	0.0495 to 0.0505 mA
1 mA	1 mA	0.99 to 1.01 mA
10 mA	10 mA	9.9 to 10.1 mA
100 mA	100 mA	99 to 101 mA
500 mA	500 mA	495 to 505 mA
10 A	10 A	9.9 to 10.1 A

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
2.5	2.5	2.45 to 2.55
10	10	9.8 to 10.2
50	50	49 to 51
250	250	245 to 255
500	500	490 to 510
1000	1000	975 to 1025
5000	1850	1600 to 2000

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
X 1	20	±1.5° at center scale
X 10	200	±1° at center scale
X 100	2 k	±1° at center scale
X 1 k	20 k	±1° at center scale
X 10 k	200 k	±1° at center scale

664 (RADIO CITY PRODUCTS) ELECTRONIC VOLT-OHMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 3, 10, 30, 100, 300, 1000 V
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 30, 100, 300, 1000 V
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100,000 Ω R X 1000 0 to 1 MΩ R X 10,000 0 to 10 MΩ R X 1 M 0 to 1000 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
3	3	3 (adjust R22)
1000	1000	970 to 1030
300	300	291 to 309
100	100	97 to 103
30	30	29.1 to 30.9
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
100	100	100 (adjust R31)
10	10	10 (adjust R33)
1000	1000	960 to 1040

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
300	300	288 to 312
30	30	28.8 to 31.2
	25	23.8 to 26.2
	20	18.8 to 21.2
	15	13.8 to 16.2
	10	8.8 to 11.2

RESISTANCE CALIBRATION:

Range	Applied Ω	Limits Ω
R X 1	10	8.7 to 11.5
R X 10	100	87 to 115
R X 100	1 k	870 to 1150
R X 1 k	10 k	8.7 k to 11.5 k
R X 10 k	100 k	87 k to 115 k
R X 1 M	10 M	8 M to 13 M

665 (WESTON) SELECTIVE ANALYZER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 500, 1000 V
	Accuracy: 3% FS
DC Current	Ranges: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 500 mA
	Accuracy: 3% FS
AC Volts	Ranges: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 500, 1000 V
	Accuracy: 5% FS
Resistance	Ranges: R X 1 — 0 to 1000 Ω R X 10 — 0 to 10,000 Ω R X 100 — 0 to 100,000 Ω R X 1000 — 0 to 1,000,000 Ω
	Accuracy: 3% FS

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
100	100	97 to 103
50	50	48.5 to 51.5
25	25	24.25 to 25.75
10	10	9.7 to 10.3
	9	8.7 to 9.3
	8	7.7 to 8.3
	7	6.7 to 7.3
	6	5.7 to 6.3
	5	4.7 to 5.3
	4	3.7 to 4.3

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
10	3	2.7 to 3.3
	2	1.7 to 2.3
	1	0.7 to 1.3
2.5	2.5	2.425 to 2.575
1	1	0.97 to 1.03

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
500	500	485 to 515
250	250	242.5 to 257.5
100	100	97 to 103
50	50	48.5 to 51.5
25	25	24.25 to 25.75
10	10	9.7 to 10.3
2.5	2.5	2.425 to 2.575
1	1	0.97 to 1.03

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	950 to 1050
500	500	475 to 525
250	250	237.5 to 262.5
100	100	95 to 105
50	50	47.5 to 52.5
25	25	23.75 to 26.25
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.375 to 2.625
1	1	0.95 to 1.05

CALIBRATION PERFORMANCE TABLE (Cont.)

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
1000	10	9.7 to 10.7
10,000	100	97 to 107
100,000	1000	970 to 1070
1,000,000	10,000	9,700 to 10,700

665-J-2 (JACKSON ELEC) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications	
DC Volts	Ranges: 0 to 3, 15, 30, 150, 300 V	
	Accuracy: ±2% FS	
DC Current	Ranges: 0 to 3, 15, 150, 300, 1500 mA	
	Accuracy: ±2% FS	
AC Volts	Ranges: 0 to 3, 15, 30, 150, 300 V	
	Accuracy: ±4% FS	
Resistance	Ranges:	
	R X 1	35 Ω Center scale
	R X 100	3500 Ω Center scale
	Accuracy: ±2% of linear scale length at center scale	

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
300	300	294 to 306
150	150	147 to 153
30	30	29.4 to 30.6
15	15	14.7 to 15.3
3	3	2.94 to 3.06
	2.5	2.44 to 2.56
	2	1.94 to 2.06
	1.5	1.44 to 1.56
	1	0.94 to 1.06

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
1500	1500	1470 to 1530
300	300	294 to 306
150	150	147 to 153
15	15	14.7 to 15.3
3	3	2.94 to 3.06

CALIBRATION PERFORMANCE TABLE

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
300	300	288 to 312
150	150	144 to 156
30	30	28.8 to 31.2
15	15	14.4 to 15.6
3	3	2.88 to 3.12
	2.5	2.38 to 2.62
	2	1.88 to 2.12
	1.5	1.38 to 1.62
	1	0.88 to 1.12

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9 to 11
R X 100	1 k	90 to 110

666-HH (TRIPLETT) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 10, 100, 500 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 50, 250, 1000, 5000 V
	Accuracy: ±4% FS
Resistance	Ranges: LO OHMS 0 to 2000 Ω HI OHMS 0 to 400,000 Ω
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1850	1700 to 2000
5000	1000	850 to 1150
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
500	500	485 to 515
100	100	97 to 103
10	10	9.7 to 10.3

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	800 to 1200
1000	1000	960 to 1040
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
LO OHMS	10	8.7 to 11.5
HI OHMS	1 k	870 to 1150

666-R (TRIPLETT) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% FS, 10 to 1000 V Ranges ±5% FS, 5000 V Ranges
DC Current	Ranges: 0 to 10, 100 mA; 0 to 1 A
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 50, 250, 1000, 5000 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 1 0 to 3000 Ω R X 100 0 to 300,000 Ω R X 1000 0 to 3 MΩ
	Accuracy: ±3% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1750	1500 to 2000
5000	1000	750 to 1250
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3

DC CURRENT CALIBRATION:

Range	Applied	Limits
1 A	1 A	0.97 to 1.03 A
100 mA	100 mA	97 to 103 mA
10 mA	10 mA	9.7 to 10.3 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	750 to 1250
1000	1000	950 to 1050
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9.4 to 10.6
R X 100	1 k	940 to 1060
R X 1 k	10 k	9.4 k to 10.6 k

670 (WESTON) INCIRCUIT TESTER-FET VOM

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0.1, 0.3, 1, 3, 10, 30, 100 and 300 V
	Accuracy: ±2% FS in horizontal position
AC Volts	Ranges: Same as DC mode
	Accuracy: ±3% FS in horizontal position
	Frequency Response: ±5% (40 Hz to 10 kHz)
DC Milliamperes	Ranges: 3, 10, 30, 100 and 300 mA
Two Terminal	Accuracy: ±3% FS in horizontal position
Four Terminal	Accuracy: ±5% FS in horizontal position
Resistance	Ranges: X 1, X 10, X 100, X 1000, X 10 k, X 100 k and X 1 M
	Accuracy: ±3% of arc length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (VDC)	Applied (VDC)	Limits (VDC)
300	280	274 to 286
100	90	88 to 92
30	25	24.4 to 25.6
10	8	7.8 to 8.2
	6	5.8 to 6.2
	4	3.8 to 4.2
	2	1.8 to 2.2
3	2.8	2.74 to 2.86
1	0.9	0.88 to 0.92
0.3	0.28	0.274 to 0.286
0.1	0.09	0.088 to 0.092

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (ACV)	Applied (ACV)	Limits (ACV)
300	280	271 to 289
100	90	87 to 93
30	28	27.1 to 28.9
10	9	8.7 to 9.3
3	2.8	2.71 to 2.89
1	0.9	0.87 to 0.93
0.3	0.28	0.271 to 0.289
0.1	0.09	0.087 to 0.093

DCMA CALIBRATION:

Range (DCMA)	Applied (DCMA)	Limits (DCMA) 2 TERM	Limits (DCMA) 4 TERM
300	285	276 to 294	270 to 300
100	90	87 to 93	85 to 95
30	28	27.1 to 28.9	27.85 to 28.15
10	9	8.7 to 9.3	8.5 to 9.5
3	2.8	2.71 to 2.89	2.65 to 2.95

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
X 1	10	±3% of arc length
X 10	100	±3% of arc length
X 100	1 k	±3% of arc length
X 1000	10 k	±3% of arc length
X 10 k	100 k	±3% of arc length
X 100 k	1000 k	±3% of arc length
X 1 M	10 M	±3% of arc length

697 (WESTON) VOLT-OHM-MILLIAMMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 7.5, 15, 150, 750 V
	Accuracy: ±2% FS
DC Current	Ranges: 0 to 7.5, 75 mA
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 7.5, 15, 150, 750 V
	Accuracy: ±5% FS
Resistance	Ranges: R X 10 0 to 5000 Ω R X 1000 0 to 500,000 Ω
	Accuracy: ±1/16 inch of Meter Arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
750	750	735 to 765
150	150	147 to 153
	120	117 to 123
	90	87 to 93
	60	57 to 63
	30	27 to 33
15	15	14.7 to 15.3
7.5	7.5	7.35 to 7.65

DC CURRENT CALIBRATION:

Range	Applied	Limits
75 mA	75 mA	73.5 to 76.5 mA
7.5 mA	7.5 mA	7.35 to 7.65 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
750	750	712.5 to 787.5
150	150	142.5 to 157.5
	120	112.5 to 127.5
	90	82.5 to 97.5
	60	52.5 to 67.5
	30	22.5 to 37.5
15	15	14.25 to 15.75
7.5	7.5	7.125 to 7.875

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 10	30	27.0 to 32.5
R X 1 k	3 k	2.70 to 3.25 k

72-385 (TENMA) MULTIMETER

TI Characteristics	Performance Specifications	
DC Volts	Ranges: 0.1, 2.5, 10, 50, 250, 500, 1000 V	
	Accuracy: ±3% FS	
DC Current	Ranges: 50 µA, 2.5, 25, 250 mA, 10 A	
	Accuracy: ±3% FS	
AC Volts	Ranges: 10, 50, 250, 1000 V	
	Accuracy: ±4% FS	
Resistance	Ranges:	
	R X 1	0 to 2000 Ω
	R X 10	0 to 20,000 Ω
	R X 1 k	0 to 20 MΩ
	R X 10 k	0 to 20 MΩ
	Accuracy: ±3° arc	

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (VDC)	Applied (VDC)	Limits (VDC)
1000	1000	970 to 1030
500	500	485 to 515
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575
0.1	0.1	0.97 to 0.103

DC CURRENT CALIBRATION:

Range	Applied	Limits
10 A	10 A	9.7 to 10.3 A

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION: (Cont.)

Range	Applied	Limits
250 mA	250 mA	242.5 to 257.5 mA
25 mA	25 mA	24.25 to 25.75 mA
2.5 mA	2.5 mA	2.425 to 2.575 mA
50 µA	50 µA	48.5 to 51.5 µA

AC VOLTS CALIBRATION:

Range	Applied	Limits
1000	1000	960 to 1040
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	10 ±3° of arc length
R X 10	100	100 ±3° of arc length
R X 1 k	10,000	10 k ±3° of arc length
R X 10 k	100,000	100 k ±3° of arc length

82373 (SEARS) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 5, 10, 25, 50, 125, 250 V
	Accuracy: ±3% of FS
	Range: 0 to 0.125, 0.25, 1.25, 2.5, 500, 1000 V
	Accuracy: ±4% of FS
AC Volts	Ranges: 0 to 5, 10, 25, 50, 125, 250, 500, 1000 V
	Accuracy: ±4% of FS
DC Current	Ranges: 0 to 25, 50 μA; 0 to 2.5, 5, 25, 50, 250, 500 mA; 0 to 5, 10 A
	Accuracy: ±3% of FS
Resistance	Ranges: 0 to 20 MΩ
	Accuracy: ±3% of FS arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied	Limits
0.125	0.12	0.115 to 0.125
0.25	0.2	0.19 to 0.21
1.25	1.2	1.15 to 1.25
2.5	2.0	1.9 to 2.1
5	4.5	4.35 to 4.65
10	2	1.7 to 2.3
	4	3.7 to 4.3
	6	5.7 to 6.3
	8	7.7 to 8.3
25	22.5	21.75 to 23.25
50	45	43.5 to 46.5
125	120	116.25 to 123.75

CALIBRATION PERFORMANCE TABLE (Cont.)

DC VOLTS CALIBRATION: (Cont.)

Range	Applied	Limits
250	240	232.5 to 247.5
500	480	460 to 500
1000	960	920 to 1000

AC VOLTS CALIBRATION:

Range	Applied	Limits
5	4.5	4.3 to 4.7
10	2	1.6 to 2.4
	4	3.6 to 4.4
	6	5.6 to 6.4
	8	7.6 to 8.4
25	24	23 to 25
50	48	46 to 50
125	120	115 to 125
250	240	230 to 250
500	480	460 to 500
1000	960	920 to 1000

RESISTANCE CALIBRATION:

Range	Applied	Limits
R X 1	10	9 to 11
R X 10	100	90 to 110
R X 100	1 k	900 to 1100
R X 1 k	10 k	9 k to 11 k
R X 10 k	100 k	90 k to 110 k

83K (MERCER ELEC) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.25, 2.5, 10, 50, 250, 500, 1000 V
	Accuracy: ±3% of FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 500, 1000 V
	Accuracy: ±4% of FS
DC Current	Ranges: 0 to 50 μA; 0 to 5, 50, 500 mA
	Accuracy: ±3% of FS
Resistance	Ranges: 0 to 2 MΩ in 4 Ranges
	Accuracy: ±3% of arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
0.25	0.2	0.1925 to 0.2075
2.5	2	1.925 to 2.075
10	2	1.7 to 2.3
	4	3.7 to 4.3
	6	5.7 to 6.3
	8	7.7 to 8.3
50	40	38.5 to 41.5
250	240	232.3 to 247.2
500	480	465 to 495
1000	970	940 to 1000

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
2.5	2	1.9 to 2.1
10	8	7.6 to 8.4
50	45	43 to 47

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION: (Cont.)

Range (V)	Applied (V)	Limits (V)
250	240	230 to 250
500	480	460 to 500
1000	960	920 to 1000

DC CURRENT CALIBRATION:

Range	Applied	Limits
50 µA	40 µA	38.5 to 41.5 µA
0.5 mA	0.4 mA	0.385 to 0.415 mA
5 mA	4 mA	3.85 to 4.15 mA
50 mA	40 mA	38.5 to 41.5 mA
500 mA	400 mA	385 to 415 mA

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
X 1	20	20 ±3% of arc
X 10	200	200 ±3% of arc
X 1 k	20 k	20 k ±3% of arc
X 10 k	200 k	200 k ±3% of arc

870 (AMPHENOL) VOLT-OHMMETER

TI Characteristics	Performance Specifications
± DC Volts	Ranges: 0 to 0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000
	Accuracy: ±2% FS
AC Volts	Ranges: 0 to 0.01, 0.03, 0.1, 0.3, 1, 3, 10, 30, 100, 300
	Accuracy: ±3% FS (50 Hz to 50 kHz)
Resistance	Ranges: R X 1, R X 10, R X 100, R X 1 k, R X 10 k, R X 100 k, R X 1 M
	Accuracy: ±3° of arc

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range	Applied	Limits
0.1	0.1	0.098 to 0.102
0.3	0.3	0.294 to 0.306
1	1	0.98 to 1.02
3	3	2.94 to 3.06
10	±10	9.8 to 10.2
	±8	7.8 to 8.2
	±6	5.8 to 6.2
	±4	3.8 to 4.2
	±2	1.8 to 2.2
30	30	29.4 to 30.6
100	100	98 to 102
300	300	294 to 306
1000	1000	980 to 1020

AC VOLTS CALIBRATION:

Range	Applied	Limits
0.01	0.01	0.0097 to 0.0103
0.03	0.03	0.0291 to 0.0309

CALIBRATION PERFORMANCE TABLE (Cont.)

AC VOLTS CALIBRATION: (Cont.)

Range	Applied	Limits
0.1	0.1	0.097 to 0.103
0.3	0.3	0.291 to 0.309
1	1	0.97 to 1.03
3	3	2.91 to 3.09
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
30	30	29.1 to 30.9
100	100	97 to 103
300	300	291 to 309

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	8.7 to 11.5
R X 10	100	87 to 115
R X 100	1 k	870 to 1150
R X 1 k	10 k	8.7 k to 11.5 k
R X 10 k	100 k	87 k to 115 k
R X 100 k	1 M	0.87 M to 1.15 M
R X 1 M	10 M	8 M to 13 M

900 (TRIPLETT) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 250 mV
	Accuracy: ±2% FS
	Ranges: 0 to 2.5, 10, 50, 250, 1000 V
	Accuracy: ±2% FS
	Range: 5000 V
	Accuracy: ±4% FS
DC Microampere	Ranges: 0 to 100 @ 250 mV
	Accuracy: ±2% FS
DC Milliampere	Ranges: 0 to 10 through 100 @ 250 mV 0 to 1000 @ 400 mV
	Accuracy: ±2% FS
DC Amps	Ranges: 0 to 10 A @ 600 mV
	Accuracy: ±2% FS
	Ranges: 0 to 100 A @ 250 mV
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 3, 10, 50, 250 & 1000 V (Cal on 60 Hz for all ranges)
	Accuracy: ±3% FS
	Ranges: 5000 V
	Accuracy: ±5% FS
AC Amps	Ranges: 0 to 6, 12, 30, 60, 120, 300 (Accessory Adapter)
	Accuracy: ±8% FS
Ohms (4.4 - 44 at center scale)	Ranges: 0 to 1000, 10000
	Accuracy: ±2% scale length
Megohms (4400 - 440,000 at center scale)	Ranges: 0 to 1100
	Accuracy: ±2% scale length
Temperature	Ranges: -50°F to +100°F +40°F to +300°F
	Accuracy: ±2% scale length +2°F
Tachometer Generator	Ranges: 0 - 500 - 5000 rpm
	Accuracy: ±4% FS

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
250 mV	225 mV	220 to 230 mV
5000	4000	3800 to 4200
1000	900	880 to 920
250	225	220 to 230
50	50	49 to 51
10	10	9.8 to 10.2
	8	7.8 to 8.2
	6	5.8 to 6.2
	4	3.8 to 4.2
	2	1.8 to 2.2
2.5	2	1.95 to 2.05

DC CURRENT CALIBRATION:

Range	Applied	Limits
100 µA	100 µA	98 to 102 µA
10 mA	10 mA	9.8 to 10.2 mA
	8 mA	7.8 to 8.2 mA
	6 mA	5.8 to 6.2 mA
	4 mA	3.8 to 4.2 mA
	2 mA	1.8 to 2.2 mA
100 mA	100 mA	98 to 102 mA
1000 mA	1000 mA	980 to 1020 mA
10 A	10 A	9.8 to 10.2 A
100 A	100 A	97 to 103 A

AC VOLTS CALIBRATION:

Range	Applied (V)	Limits (V)
5000	1000	750 to 1250
1000	900	870 to 930
250	225	217.5 to 232.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
3	3	2.91 to 3.09

CALIBRATION PERFORMANCE TABLE (Cont.)

AMPS AC CALIBRATION:

Range (ACA)	Applied (ACA)	Limits (ACA)
6	6	5.52 to 6.48
12	10	9.04 to 10.96
30 *	30	27.6 to 32.4
60	60	55.2 to 64.8
120	120	110.4 to 129.6
300	300	276 to 324

* NOTE: Use a 327 Current Transformer for current above 10 A.

OHMMETER CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
X 1	4.40	4.40 ±2% of scale length
X 10	440	440 ±2% of scale length
X 1 k	44 k	44 k ±2% of scale length
X 100 k	440 k	440 k ±2% of scale length

TEMPERATURE CALIBRATION:

For Parameters and Method see 33K5-4-1-1 (42).

RPM CALIBRATION:

For Parameters and Method see 33K6-4-1-9 (869).

910-4546 (ALLIED ELECTRONICS) VOM

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 5, 25, 125, 500, 1000 V (20,000 Ω/V)
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 50 μA, 0 - 250 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 10, 50, 250, 1000 V (10,000 Ω/V)
	Accuracy: ±4% FS
Resistance	Ranges: R X 1 0 to 2 k R X 10 0 to 20 k R X 1 k 0 to 2 MΩ
	Accuracy: ±3% of scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	970 to 1030
500	500	485 to 515
125	125	121.3 to 128.8
25	25	24.3 to 25.8
	20	19.2 to 20.8
	15	14.2 to 15.8
	10	9.2 to 10.8
	5	4.2 to 5.8
5	5	4.85 to 5.15

DC CURRENT CALIBRATION:

Range	Applied	Limits
250 mA	250 mA	242.5 to 257.5 mA
	100 mA	92.5 to 107.5 mA

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION: (Cont.)

Range	Applied	Limits
250 mA	10 mA	2.5 to 17.5 mA
50 µA	50 µA	48.5 to 51.5 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1000	1000	960 to 1040
250	250	240 to 260
50	50	48 to 52
10	10	9.6 to 10.4
	8	7.6 to 8.4
	6	5.6 to 6.4
	4	3.6 to 4.4
	2	1.6 to 2.4

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	24	21 to 28
R X 10	240	210 to 280
R X 1 k	24 k	21 to 28 k

955 (SIMPSON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±3% FS
DC Current	Ranges: 0 to 100 µA 0 to 1, 10, 100, 500 mA
	Accuracy: ±3% FS
AC Volts	Ranges: 0 to 2.5, 10, 50, 250, 1000, 5000 V
	Accuracy: ±5% FS
Resistance	Ranges: R ÷ 1 0 to 100 Ω R X 1 0 to 1000 Ω R X 10 0 to 10,000 Ω R X 100 0 to 100,000 Ω R X 10,000 0 to 10 MΩ
	Accuracy: ±5% of linear scale length

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1850	1700 to 2000
5000	1000	850 to 1150
1000	1000	970 to 1030
250	250	242.5 to 257.5
50	50	48.5 to 51.5
10	10	9.7 to 10.3
	8	7.7 to 8.3
	6	5.7 to 6.3
	4	3.7 to 4.3
	2	1.7 to 2.3
2.5	2.5	2.425 to 2.575

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
500 mA	500 mA	485 to 515 mA
100 mA	100 mA	97 to 103 mA
10 mA	10 mA	9.7 to 10.3 mA
1 mA	1 mA	0.97 to 1.03 mA
100 µA	100 µA	97 to 103 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
5000	1000	750 to 1250
1000	1000	950 to 1050
250	250	237.5 to 262.5
50	50	47.5 to 52.5
10	10	9.5 to 10.5
	8	7.5 to 8.5
	6	5.5 to 6.5
	4	3.5 to 4.5
	2	1.5 to 2.5
2.5	2.5	2.375 to 2.625

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R + 1	10	7 to 13.8
R X 1	100	70 to 138
R X 10	1 k	700 to 1380
R X 100	10 k	7 k to 13.8 k
R X 10 k	100 k	70 k to 138 k

980 (WESTON) MULTIMETER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 1.6, 8, 40, 160, 400, 800, 1600, 4000 Accuracy: ±2% FS, 1.6 to 1600 V Ranges ±3% FS, 4000 V Range
DC Current	Ranges: 0 to 80 μA 0 to 1.6, 8, 80, 800 mA 0 to 8 A Accuracy: ±2% FS
AC Volts	Ranges: 0 to 1.6, 8, 40, 160, 400, 1600 V Accuracy: ±3% FS
Resistance	Ranges: R X 1 0 to 1,000 R X 10 0 to 10,000 R X 100 0 to 100,000 R X 1000 0 to 1 MΩ R X 10,000 0 to 10 MΩ Accuracy: ±2 divisions on the 16 scale

CALIBRATION PERFORMANCE TABLE

DC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
4000	1880	1760 to 2000
1600	1600	1568 to 1632
800	800	784 to 816
400	400	392 to 408
160	160	156.8 to 163.2
40	40	39.2 to 40.8
	30	29.2 to 30.8
	20	19.2 to 20.8
	10	9.2 to 10.8
8	8	7.84 to 8.16
1.6	1.6	1.568 to 1.632

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range	Applied	Limits
8 A	8 A	7.84 to 8.16 A
800 mA	800 mA	784 to 816 mA
80 mA	80 mA	78.4 to 81.6 mA
8 mA	8 mA	7.84 to 8.16 mA
1.6 mA	1.6 mA	1.568 to 1.632 mA
80 µA	80 µA	78.4 to 81.6 µA

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1600	1000	952 to 1048
400	400	388 to 412
160	160	155.2 to 164.8
40	40	38.8 to 41.2
	30	28.8 to 31.2
	20	18.8 to 21.2
	10	8.8 to 11.2
8	8	7.76 to 8.24
1.6	1.6	1.552 to 1.648

RESISTANCE CALIBRATION:

Range	Applied (Ω)	Limits (Ω)
R X 1	10	9 to 11
R X 10	100	90 to 110
R X 100	1 k	900 to 1100
R X 1 k	10 k	9 k to 11 k
R X 10 k	100 k	90 k to 110 k

3201 (YOKOGAWA ELEC) CIRCUIT TESTER

TI Characteristics	Performance Specifications
DC Volts	Ranges: 0 to 0.3, 1.2, 3, 12, 30, 120, 300, 1200 V Accuracy: ±2% FS on 7 lowest ranges; ±3% FS on 1200 V range
DC Current	Ranges: 0 to 0.012, 0.12, 1.2, 12, 120, 1200 mA Accuracy: ±2% FS
AC Volts	Ranges: 0 to 2, 12, 30, 120, 300, 1200 V Accuracy: ±3% FS on 5 lowest ranges; ±4% FS on 1200 V range
Resistance	Ranges: 2, 200, 20,000 kΩ Accuracy: ±3% FS

CALIBRATION PERFORMANCE TABLE

Range (V)	Applied (V)	Limits (V)
1200	1200	1164 to 1236
300	300	294 to 306
120	120	117.6 to 122.4
30	30	29.4 to 30.6
12	12	11.76 to 12.24
	10	9.76 to 10.24
	8	7.76 to 8.24
	6	5.76 to 6.24
	4	3.76 to 4.24
	2	1.76 to 2.24
3	3	2.94 to 3.06
1.2	1.2	1.176 to 1.224
0.3	0.3	0.294 to 0.306

CALIBRATION PERFORMANCE TABLE (Cont.)

DC CURRENT CALIBRATION:

Range (mA)	Applied (mA)	Limits (mA)
1200	1200	1176 to 1224
120	120	117.6 to 122.4
12	12	11.76 to 12.24
1.2	1.2	1.176 to 1.224
0.12	0.12	0.1176 to 0.1224
0.012	0.012	0.01176 to 0.01224

AC VOLTS CALIBRATION:

Range (V)	Applied (V)	Limits (V)
1200	1000	952 to 1048
300	300	291 to 309
120	120	116.4 to 123.6
30	30	29.1 to 30.9
12	12	11.64 to 12.36
	10	9.64 to 10.36
	8	7.64 to 8.36
	6	5.64 to 6.36
	4	3.64 to 4.36
	2	1.64 to 2.36
3	3	2.91 to 3.09

RESISTANCE CALIBRATION:

Range (Ω)	Applied (Ω)	Limits (Ω)
R X 1	10	9.7 to 10.3
R X 10	100	97 to 103
R X 10 k	100 k	97 k to 103 k