

# OPERATING INSTRUCTIONS

for  
**AMPROBE®**  
**MODEL AM-4B**  
**DIGITAL**  
**INDUSTRIAL MULTIMETER**

- See PRECAUTIONS FOR PERSONAL AND INSTRUMENT PROTECTION on page 7.
- See Limited Warranty on page 20



## FACTORY SERVICE

Serial number is located on the label on the back of the instrument.

For Factory service, package instrument and packing slip with sufficient cushioning material in a shipping carton; make certain your name and address also appear on box as well as packing slip; ship prepaid via U.P.S. (where available) or Air Parcel Post insured to:

Service Division  
AMPROBE INSTRUMENT  
630 Merrick Road (Use for U.P.S.)  
P.O. Box 329 (Use for Parcel Post)  
Lynbrook, NY 11563-0329

Outside the U.S.A. the local Amprobe representative will assist you.

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## SPECIFICATIONS

### Voltage Ranges

0-1.999/19.99/199.9/1000VAC 15KVAC  
1-1.999/19.99/199.9/1500VDC 15KVDC } See Note 2 on page 5  
0-199.9mV AC/DC

### Resistance Ranges

0-19.99 ohms  
0-199.9 ohms with buzzer (♫)  
0-199.9 ohms without buzzer  
0-1.999/19.99/199.9/1999K ohms  
Special Diode Test Range: 2mA  $\pm 1$  at 0-1.999VDC

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### Current Ranges

0-19.99/199.9 $\mu$ A AC/DC (AC Accuracy may be affected by outside interference)  
0-1.999/19.99/199.9mA AC/DC  
0-10 amps AC/DC  
See Note 1 on page 4

### Power (KW) Ranges (Also Amps AC)

0-19.99/199.9KW; 0-40/400KW; 0-1000 amps AC.  
See Note 5 on page 5

### Leakage

0-1.999mA AC (120 or 230VAC Appliances). See Note 4 on page 5

### Temperature

-50°F to +250°F. (-45.6°C to +121°C). See Note 3 on page 5

### Accuracy

DC:  $\pm 0.8\%$  of reading  $\pm 1$ LSD.  
AC Volts:  $\pm 1.25\%$  of reading  $\pm 3$ LSD based on sinusoidal waveform of 40Hz to 1kHz, except 1000V, which is based on sinusoidal waveform of 40Hz to 400Hz.  
AC Amps:  $\pm 1.5\%$  of reading  $\pm 3$ LSD based on sinusoidal waveform of 40Hz to 1kHz, except 10 Amp range which is 2.5% of reading  $\pm 4$ LSD based on sinusoidal waveform from 40Hz to 400Hz. (Accuracy on 0-20/200 $\mu$ A ranges may be affected by outside interference).  
Resistance:  $\pm 1\%$  of reading  $\pm 2$ LSD.  
KW/Amp Transducers: KW  $\pm 2.8\%$  of reading;  
Amps  $\pm 2\%$  of reading (based on sinusoidal waveform).  
Clamp-on, AC Current Transducers add  $\pm 1/2\%$  of reading.  
15KV AC/DC High Voltage Probe add up to  $\pm 2\%$  of reading.  
Leakage detector meets and exceeds ANSI requirements.

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Temperature: AM-4B instrument with RBT-11B/12B/13B probes—

<u>°F Range</u>	<u>°C Equivalent</u>	<u>Accuracy</u>
- 50° to - 31°F	- 45.56° to - 35°C	± 1° F
- 30° to + 5°F	- 34.44° to - 15°C	± 3/4° F
+ 6° to + 100°F	- 14.44° to + 37.78°C	± 1/2° F
+ 101° to + 130°F	+ 38.33° to + 54.44°C	± 3/4° F
+ 131° to + 160°F	+ 55.00° to + 71.11°C	± 1° F
+ 161° to + 212°F	+ 71.67° to + 100°C	± 2° F
+ 213° to + 250°F	+ 100.56° to + 121.11°C	± 3° F

The AM-4B features auto-zeroing on all ranges except the very sensitive 0-20Ω range where it may be necessary to use the ohm zero adjustment screw (marked 0-20Ω "0" ADJ) to zero the instrument.

#### Power Supply (AM-4B)

Uses one 9V Alkaline Battery (Cat. No. MN 1604).

#### Circuit Protection

Micro-amp (μA) and milliamp (mA) ranges are fuse protected up to 600 volts AC/DC, catalog no. 6.3×25-2-12. Do not use substitute fuses. See page 19.

Resistance ranges protected against momentary misapplication up to a maximum of 550V AC/DC no longer than 15 seconds.

The 10 ampere range is overload protected up to 15 amperes maximum. All voltage ranges are overload protected up to 1000VAC and 1500VDC.

**IMPORTANT: Use of instrument and/or accessories on circuits with higher voltages and/or currents than the indicated overload limits may result in personal injury and/or damage to the instrument and/or accessories.**

**\*\* Note 1. These ranges are available through the use of accessory current transducers — Model A663-4B (0-300 amps) and Model A664-4B (0-1000 amps), 45 to 500Hz.**

**IMPORTANT: Do not use current transducers on uninsulated conductors in circuits with voltages above 3000VAC.**

**\*\* Note 2. This range capability is available through the use of an accessory High Voltage Probe Model HV-2 and resistor Model HVR-4. Resistor is not supplied with probe.**

**\*\* Note 3. This range capability is available through the use of an accessory temperature probe Model RBT-11B, RBT-12B or RBT-13B † and the Resistance/Temperature Chart on page 14.**

**\*\* Note 4. This testing capability is available through the use of an Accessory AC Leakage Detector Model ACL-4B.**

†RBT-13B CANNOT be used in temperatures above 150°F.

**\*\* Note 5. These ranges are available through the use of accessory transducers Model AW80 (0-20/200KW) and Model AW81 (0-40/400KW). Both units also measure 0-1000 Amps AC (50-60Hz).**

**\*\* Accessory is not supplied with the basic AM-4B instrument.**

### GENERAL

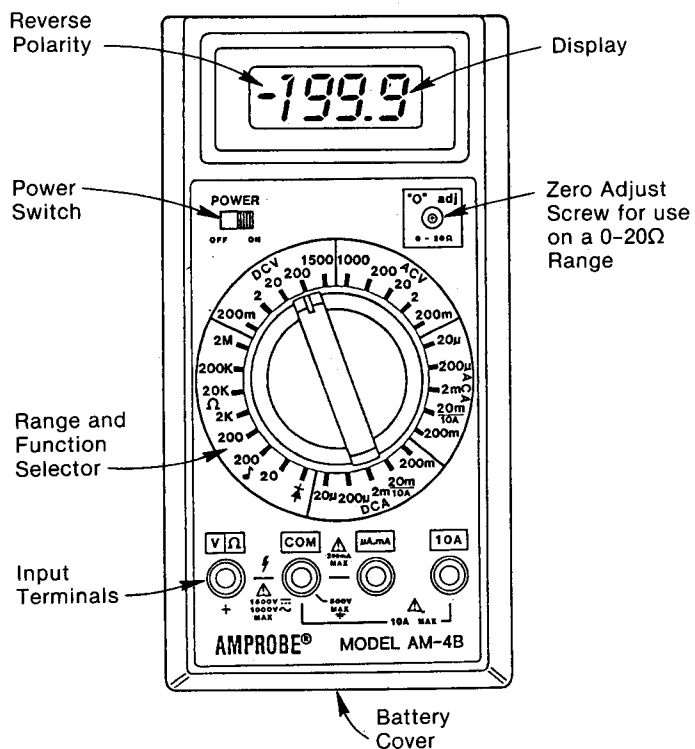
To install the battery (9 volt alkaline cat. no. MN1604), turn instrument face down and remove battery cover by sliding out. Snap battery into connector, place battery into compartment and replace cover.

To turn the AM-4B on, slide the on/off switch (fig. 1) to the right until it is in the "on" position, and the digital display appears in the window.

The front panel of the AM-4B is designed, labelled and color-coded to simplify its operation and to minimize the possibility of error.

To activate any particular function and range, move the rotary switch until the mark on the switch knob lines up with desired range in the proper color-coded area.

Figure 1



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### PRECAUTIONS FOR PERSONAL AND INSTRUMENT PROTECTION

- 1) Read these instructions thoroughly and follow them carefully.
- 2) In many instances you will be working with dangerous levels of voltage and/or current; therefore, it is important that you avoid direct contact with any uninsulated, current-carrying surfaces. Appropriate insulating gloves and clothing should be worn.
- 3) Before connecting or disconnecting the meter to or from the circuit to be tested, turn off all power to the circuit.
- 4) Before applying test leads to circuit under test, make certain that leads are plugged into proper jacks and switches are set to proper range and function.
- 5) Before using any electrical instruments or tester for actual testing, the unit should be checked on a low energy high impedance source. **Do not use power distribution lines or any other high energy sources.**
- 6) If the instrument should indicate that voltage is not present in circuit, do not touch circuit until you have checked to see that all instrument switches are in proper position and instrument has been checked on a known live line.
- 7) Make certain no voltage is present in circuit before connecting ohmmeter to circuit.

**IMPORTANT:** Plug in only one accessory probe or set of test leads at any one time, except as directed.

**IMPORTANT:** Failure to follow these instructions and/or observe the above precautions may result in personal injury and/or damage to the instrument and/or accessories.

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### Low Battery Indication

When "Lo Bat" appears in the upper left corner of display, replace battery.

### Over-range Indication

When an input is greater than the range selected, a "1" with a decimal point appears in the display. This is an over-range condition.

### DC/AC Voltage Ranges

All voltage measurements are read directly from the digital display except when using the 15KV AC/DC probe, in which case an appropriate multiplying factor must be applied.

### AC VOLTAGE MEASUREMENT (See Operating Precautions on page 7)

- 1) Move rotary switch to desired AC voltage range.
- 2) Plug the Black test lead into the "COM" jack.
- 3) Plug the Red test lead into the "V/ $\Omega$ " jack.
- 4) Place one test prod on each side of the AC voltage.
- 5) If meter reading falls within the limits of a lower range, move selector switch to the lower range.

For 15KVAC, see Note 2 on page 5 and instructions on page 9.

### DC VOLTAGE MEASUREMENT (See Operating Precautions on page 7)

- 1) Move rotary switch to desired DC voltage range.
- 2) Plug the Black test lead into the "COM" jack.
- 3) Plug the Red test lead into the "V/ $\Omega$ " jack.
- 4) If Negative and Positive sides of the circuit to be tested are known:
  - a) connect the Black test prod to the Negative side of the circuit.
  - b) connect the Red test prod to the Positive side of the circuit.

If the Negative and Positive sides of the circuit are not known:

- a) connect the Black and Red prods to the circuit
  - b) If "-" sign appears in the left of display, reverse the Black and Red probes.
- 5) If meter reading falls within the limits of a lower range, move selector switch to the lower range.

For 15KV DC, see Note 2 on page 5 and instructions below.

### HIGH VOLTAGE PROBE 15KV (See Operating Precautions on page 7)

- 1) To use accessory High Voltage Probe Model HV-2 with the AM-4B, unscrew handle from main probe and insert resistor Model HVR-4, (not supplied with probe) with the spring on the resistor toward the handle.
- 2) Screw handle back onto probe.
- 3) Move rotary switch to 200 volts AC or DC.
- 4) Plug instrument's Black voltage test lead into "COM" jack on AM-4B and fasten the other end of the lead to "ground" of circuit being tested.
- 5) Plug HV-2 Probe (with resistor installed) into "V/ $\Omega$ " jack.
- 6) With your hand behind the protective discs on the handle of the probe, touch the probe tip to the circuit under test.
- 7) Take reading and multiply by 100.

**CAUTION:** DO NOT EXCEED 15,000 volts AC or DC.

**NOTE:** Tip of HV-2 Probe is replaceable.

### AC\*/DC CURRENT MEASUREMENTS (See Operating Precautions on page 7)

*\*See instructions below for measuring AC current with accessory clamp-on transducer.*

A milliampere is one thousandth (1/1000) of an ampere and may be written as 1 mA or 0.001 ampere.

A microampere is one millionth (1/1,000,000) of an ampere and may be written as 1 $\mu$ A or 0.000001 ampere.

Meter must be connected in series with the circuit under test.

- 1) Using rotary switch, select appropriate function and range. When current is unknown, use the highest current range.
- 2) Plug Black test lead into the "COM" jack.
- 3) Plug Red test lead into the "μA/mA" jack for measurements up to 200 mA; for measurements above 200mA up to 10A, plug Red test lead into "10A" jack.
- 4) Using the Red and Black test leads connect the meter in series with the circuit under test.
- 5) If "-" sign appears to the left of the reading when measuring DC, reverse the Red and Black test prods.
- 6) If meter reading falls within the limits of a lower range, move selector switch to the lower range.

#### AC CURRENT MEASUREMENT WITH CLAMP-ON

TRANSUCER (See Operating Precautions on page 7)

AC Current can be measured using a clamp-on current transducer available separately as an accessory—Model A663-4B for 0–300 amps; Model A664-4B for 0–1000 amps.

- 1) Select appropriate AC voltage range.
  - a) for currents below 200 amperes, select the 200mV position.
  - b) for currents above 200 amperes, select the 2 volt AC position.
  - c) If current is unknown, select the 2 volt range.
- 2) Plug the leads of the A663-4B/A664-4B transducer into the "COM" jack and the "V/Ω" jack.
- 3) Clamp current transducer around a single conductor.
- 4)
  - a) Read display directly when using the "200mV" range.
  - b) Disregard the decimal point when using the "2V" range switch, eg., a reading of .251 is 251 amperes; a reading of .832 is 832 amperes.
  - c) If instrument is set on "2V" range and reading is less than .200, switch to the "200mV" range.

**NOTE:** The AMPTRAN® 50:1 transformers (Models CT50-1 and CT50-2), the Deca-Tran® 10:1 transformer (Model A50-1) and the Energizer line splitter (Model A-47L) may be used with the A663-4B/A664-4B transducers to further expand the current measuring capability of the AM-4B.

#### Using A663-4B/A664-4B and AM-4B Range

		To get actual current
200mV	with CT50-1 or 2	Multiply AM-4B reading by 50
200mV	with A50-1	Multiply AM-4B reading by 10
200mV	with A-47L 1X Loop	Read AM-4B display directly
200mV	with A-47L 10X Loop	Divide AM-4B reading by 10
2V	with CT50-1 or 2	Disregard decimal point in AM-4B reading and multiply reading by 50.*
2V	with A50-1	Disregard decimal point in AM-4B reading and multiply reading by 10.*

\*Example—Reading is .060, drop decimal point and multiply by 50;  $60 \times 50 = 3,000$  amps.

The AMPTRAN® CT50-1 has a maximum rating of 6,000 amperes intermittent duty and 5,000 amperes continuous duty. The CT50-2 has a maximum rating of 3,600 amperes intermittent duty and 3,000 amperes continuous duty. The Deca-Tran® A50-1 has a maximum rating of 1,200 amperes intermittent duty and 600 amperes continuous duty. The Energizer A-47L has a maximum rating of 20 amperes intermittent duty and 15 amperes continuous duty.

**RESISTANCE MEASUREMENTS** (See Operating Precautions on page 7)

- 1) Move rotary switch to desired ohms range.
- 2) Plug the Black test lead into the "COM" jack.

- 3) Plug the Red test lead into the "V/Ω" jack.
- 4) When the test lead tips are shorted together, the display should indicate zero resistance on all ohmmeter ranges except the 0-20 range. When using the 0-20 range it may be necessary to use the 0-20Ω "0" ADJ. screw to "zero" the display.
- 5) Connect test leads across the resistance to be measured. Caution: Resistance to be measured must be disconnected from all power before applying ohmmeter test leads.
- 6) If meter reading falls within the limits of a lower range, move switch to a lower range.
- 7) When using 200Ω Range with  $\text{♯}$ , buzzer will sound for resistances of zero to a minimum of 100Ω. Ohmic values will be displayed for the entire range.

**NOTE:** When using the Diode Test Range (  $\rightarrow\leftarrow$  ) for checking silicon diodes, a reading above 0.5 volts in the forward direction (other than an Over-range indication) indicates that the diode is functional. An Over-range indication means the diode is "open" or the test leads are connected in reverse. Switch test lead connections. If you still get an Over-range indication, diode is "open." For other types of diodes, the reading may be different; check manufacturer's specifications.

**AC LEAKAGE** (See Operating Precautions on page 7)

AC Leakage can be measured using the Model ACL-4B Leakage Detector available separately as an accessory. (For 120/230VAC Appliances)

- 1) Move rotary switch to 2mA AC position.
- 2) Plug the Black connector lead of the ACL-4B into the "COM" jack on the AM-4B.
- 3) Plug the Red connector lead of the ACL-4B into the "μA-mA" jack on the AM-4B.
- 4) Fasten the alligator clip test lead of the ACL-4B to an earth ground (metal cold water pipe, radiator, etc.) or to the power line ground or ground contact of a three-prong socket.

**IMPORTANT:** If the appliance to be checked has a 3-prong plug with a ground, *the ground connection inside the appliance must be disconnected.* Disconnect appliance from power source before doing this.

- 5) If the appliance has been disconnected from the power supply, reconnect it.
- 6) a) Using the test lead probe of the ACL-4B, touch various parts (bare metal) inside and outside of the appliance. If appliance has a multiple-cycle switch and/or a multiple-level power switch, test the appliance with the switch(es) in each position.
- b) Refer to table below for levels of leakage which are considered acceptable according to ANSI.

**MAXIMUM LEAKAGE CURRENT TABLE\***

Type of Appliance	Maximum Leakage Current (milliampere)
Two-wire cord-connected appliance	0.50
Three-wire (including grounding conductor) cord-connected portable appliance.	0.50
Three-wire (including grounding conductor) cord-connected stationary or fixed appliance	0.75

**NOTE:** Additional leakage-current requirements may be found in individual product standards.

\*Reference ANSI Publication C'101.1-1973.

## TEMPERATURE

Temperature can be measured using a Model RBT-11B, RBT-12B or RBT-13B\* thermistor probe.

\*Do not use RBT-13B above 150°F.

- 1) Move rotary switch to appropriate range; see Resistance/Temperature table below.
- 2) Plug the thermistor probe into the "COM" jack and "V/Ω" jack.
- 3) Insert thermistor probe into medium (non-corrosive) to be measured and allow probe to reach temperature of medium (resistance reading settles).
- 4) Refer to following Resistance/Temperature table for temperature that correlates to resistance reading.

Use 200K range from 55.89 to 20.32K ohms  
 20K range from 19.60 to 2.04K ohms  
 2K range from 1.99 to 0.202K ohms  
 200 ohm range from 197 to 34.7 ohms

AM-4B			AM-4B		
°F	K Ohms	°C	°F	K Ohms	°C
-50	55.89	-45.56	-36	32.65	-37.78
-49	53.71	-45.00	-35	31.45	-37.22
-48	51.66	-44.44	-34	30.31	-36.67
-47	49.68	-43.89	-33	29.20	-36.11
-46	48.85	-43.33	-32	28.16	-35.56
-45	45.98	-42.78	-31	27.12	-35.00
-44	44.52	-42.22	-30	26.15	-34.44
-43	42.58	-41.67	-29	25.21	-33.89
-42	40.95	-41.11	-28	24.31	-33.33
-41	39.45	-40.56	-27	23.45	-32.78
-40	37.94	-40.00	-26	22.62	-32.22
-39	36.54	-39.44	-25	21.83	-31.67
-38	35.19	-38.89	-24	21.05	-31.11
-37	33.89	-38.33	-23	20.32	-30.56

AM-4B			AM-4B		
°F	K Ohms	°C	°F	K Ohms	°C
-22	19.60*	-30.00	14	5.90	-10.00
-21	18.92	-29.44	15	5.72	-9.44
-20	18.26	-28.89	16	5.55	-8.89
-19	17.63	-28.33	17	5.38	-8.33
-18	17.03	-27.78	18	5.21	-7.78
-17	16.44	-27.22	19	5.05	-7.22
-16	15.89	-26.67	20	4.90	-6.67
-15	15.34	-26.11	21	4.75	-6.11
-14	14.83	-25.56	22	4.61	-5.56
-13	14.31	-25.00	23	4.47	-5.00
-12	13.83	-24.44	24	4.34	-4.44
-11	13.37	-23.89	25	4.21	-3.89
-10	12.92	-23.33	26	4.08	-3.33
-9	12.49	-22.78	27	3.96	-2.78
-8	12.07	-22.22	28	3.84	-2.22
-7	11.68	-21.67	29	3.73	-1.67
-6	11.29	-21.11	30	3.62	-1.11
-5	10.92	-20.56	31	3.52	-0.56
-4	10.56	-20.00	32	3.41	0
-3	10.21	-19.44	33	3.31	0.56
-2	9.88	-18.89	34	3.22	1.11
-1	9.56	-18.33	35	3.13	1.67
0	9.25	-17.88	36	3.04	2.22
1	8.95	-17.22	37	2.95	2.78
2	8.67	-16.67	38	2.86	3.33
3	8.38	-16.11	39	2.78	3.89
4	8.12	-15.56	40	2.71	4.44
5	7.85	-15.00	41	2.63	5.00
6	7.61	-14.44	42	2.55	5.56
7	7.37	-13.89	43	2.48	6.11
8	7.14	-13.33	44	2.41	6.67
9	6.92	-12.78	45	2.35	7.22
10	6.69	-12.22	46	2.28	7.78
11	6.49	-11.67	47	2.22	8.33
12	6.29	-11.11	48	2.16	8.89
13	6.09	-10.56	49	2.10	9.44

\*Indicates range change.



°F	AM-4B K Ohms	°C
50	2.04	10.00
51	1.99*	10.56
52	1.93	11.11
53	1.88	11.67
54	1.83	12.22
55	1.78	12.78
56	1.73	13.33
57	1.69	13.89
58	1.64	14.44
59	1.60	15.00
60	1.56	15.56
61	1.51	16.11
62	1.47	16.67
63	1.44	17.22
64	1.40	17.78
65	1.36	18.33
66	1.33	18.89
67	1.29	19.44
68	1.26	20.00
69	1.23	20.56
70	1.20	21.11
71	1.17	21.67
72	1.14	22.22
73	1.10	22.78
74	1.08	23.33
75	1.05	23.89
76	1.03	24.44
77	1.00	25.00
78	0.975	25.56
79	0.951	26.11
80	0.927	26.67
81	0.905	27.22
82	0.882	27.78
83	0.861	28.33
84	0.840	28.89
85	0.820	29.44

\*Indicates range change.

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°F	AM-4B K Ohms	°C
86	0.799	30.00
87	0.781	30.55
88	0.762	31.11
89	0.743	31.67
90	0.725	32.22
91	0.708	32.78
92	0.691	33.33
93	0.675	33.89
94	0.659	34.44
95	0.643	35.00
96	0.628	35.56
97	0.614	36.11
98	0.599	36.67
99	0.585	37.22
100	0.572	37.78
101	0.559	38.33
102	0.545	38.89
103	0.533	39.44
104	0.521	40.00
105	0.509	40.55
106	0.497	41.11
107	0.486	41.67
108	0.475	42.22
109	0.464	42.78
110	0.454	43.33
111	0.444	43.89
112	0.434	44.44
113	0.424	45.00
114	0.415	45.56
115	0.406	46.11
116	0.397	46.67
117	0.385	47.22
118	0.379	47.78
119	0.371	48.33
120	0.363	48.89
121	0.355	49.44

°F	AM-4B K Ohms	°C
122	0.347	50.00
123	0.340	50.56
124	0.333	51.11
125	0.325	51.67
126	0.319	52.22
127	0.312	52.78
128	0.305	53.33
129	0.299	53.89
130	0.292	54.44
131	0.286	55.00
132	0.280	55.55
133	0.274	56.11
134	0.269	56.67
135	0.263	57.22
136	0.258	57.78
137	0.252	58.33
138	0.247	58.89
139	0.242	59.44
140	0.237	60.00
141	0.232	60.56
142	0.228	61.11
143	0.223	61.67
144	0.218	62.22
145	0.214	62.78
146	0.210	63.33
147	0.206	63.89
148	0.202	64.44

°F	AM-4B Ohms	°C
149	197	65.00
150	194	65.56
151	190	66.11
152	186	66.67
153	182	67.22

°F	AM-4B Ohms	°C
154	179	67.78
155	175	68.33
156	172	68.89
157	169	69.44
158	165	70.00
159	162	70.56
160	160	71.11
161	156	71.67
162	153	72.22
163	150	72.78
164	147	73.33
165	144	73.89
166	142	74.44
167	139	75.00
168	136	75.56
169	134	76.11
170	131	76.67
171	129	77.22
172	127	77.78
173	124	78.33
174	122	78.89
175	120	79.44
176	117	80.00
177	115	80.55
178	113	81.11
179	111	81.67
180	109	82.22
181	107	82.78
182	105	83.33
183	103	83.89
184	102	84.44
185	100	85.00
186	98.0	85.56
187	96.2	86.11
188	94.5	86.67
189	92.9	87.22

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°F	AM-4B	
	Ohms	°C
190	91.2	87.78
191	89.7	88.33
192	88.1	88.89
193	86.5	89.44
194	85.0	90.00
195	83.5	90.56
196	82.1	91.11
197	80.7	91.67
198	79.3	92.22
199	77.9	92.78
200	76.6	93.33
201	75.3	93.89
202	74.0	94.44
203	72.8	95.00
204	71.5	95.56
205	70.4	96.11
206	69.2	96.67
207	68.0	97.22
208	66.9	97.78
209	65.8	98.33
210	64.7	98.89
211	63.6	99.44
212	62.5	100.00
213	61.5	100.56
214	60.9	101.11
215	59.5	101.67
216	58.5	102.22
217	57.6	102.78
218	56.7	103.33
219	55.7	103.89
220	54.9	104.44

°F	AM-4B	
	Ohms	°C
221	54.0	105.00
222	53.2	105.56
223	52.4	106.11
224	51.6	106.67
225	50.8	107.22
226	50.0	107.78
227	49.2	108.33
228	48.4	108.89
229	47.7	109.44
230	47.0	110.00
231	46.3	110.56
232	45.6	111.11
233	44.9	111.67
234	44.2	112.22
235	43.5	112.78
236	42.8	113.33
237	42.2	113.89
238	41.6	114.44
239	41.0	115.00
240	40.8	115.56
241	39.7	116.11
242	39.1	116.67
243	38.6	117.22
244	38.0	117.78
245	37.4	118.33
246	36.9	118.89
247	36.4	119.44
248	35.8	120.00
249	35.3	120.56
250	34.7	121.11

### POWER (KW)/AMPS WITH AW-80/81

(See Operating Precautions on page 7)

Power (KW) single phase or AC current can be measured using the Model AW-80 or AW-81 Watt/Amp Transducer available separately as an accessory.

Model AW-80 Ranges 0-19.99/199.9KW with voltage inputs up to 240VAC (+ 10% max.) and current inputs of 0-150/1000 Amps AC.

Model AW-81 Ranges 0-40/400KW with voltage inputs of 208 to 550VAC (+ 10% max.) and current inputs of 0-150/1000 Amps AC.

Both units may also be used to measure current 0-1000 Amps AC (50-60 Hz).

For complete instructions, see separate AW-80/81 operating instructions booklet, Pt. No. 981759.

### FUSE REPLACEMENT (AM-4B)

The fuse that protects the  $\mu$ A and mA ranges of the instrument is a 2 amp, 600 VAC/DC fuse, cat. no. 6.3  $\times$  25-2-12.

- 1) If the fuse is blown, remove the battery cover.
- 2) Replace the fuse with a 6.3  $\times$  25, 2 amp 600V fuse.
- 3) Replace cover.

## LIMITED WARRANTY

Congratulations! You are now the owner of an AMPROBE® instrument. It has been quality crafted according to quality standards and contains quality components and workmanship. This instrument has been inspected for proper operation of all its functions. It has been tested by qualified factory technicians according to the long-established standards of AMPROBE INSTRUMENT.

Your AMPROBE instrument has a limited warranty against defective materials and/or workmanship for one year from the date of purchase provided that, in the opinion of the factory, the instrument has not been tampered with or taken apart.

Should your instrument fail due to defective materials, and/or workmanship during the warranty period return it along with a copy of your dated bill of sale which must identify instrument by model number and serial number.

For your protection, please use the instrument as soon as possible. If damaged, or should the need arise to return your instrument, it must be securely wrapped (to prevent damage in transit) and sent prepaid via Air Parcel Post insured or UPS where available to:

Service Division  
AMPROBE INSTRUMENT  
630 Merrick Road (For U.P.S.)  
P.O. Box 329 (For P.P.)  
Lynbrook, NY 11563-0329

Outside the U.S.A. the local Amprobe representative will assist you. Above limited warranty covers repair and replacement of instrument only and no other obligation is stated or implied.