FUSE REPLACEMENT (AM-12)

The fuse that protects the µA and mA ranges of the instrument is a 2 amp, 600 VAC/DC fuse (cat. No. 6.3X25-2-12).

1) If the fuse is blown, remove the battery cover.
2) Replace the fuse with a 6.3X25-2-12 two amp fuse.
3) Replace cover.

WARRANTY

MFG # 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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Pt. No. 925787
5/89

OPERATING INSTRUCTIONS

for AMPROBE® MODEL AM-12 DIGITAL INDUSTRIAL MULTIMETER

• See PRECAUTIONS FOR PERSONAL AND INSTRUMENT PROTECTION on page 5.

• See Limited Warranty on page 2

AMPROBE INSTRUMENT®
DIVISION OF CORE INDUSTRIES INC. LYNBROOK, NEW YORK 11563

LIMITED WARRANTY

Congratulations! You are now the owner of an AMPROBE Instrument. It has been crafted according to the highest standards of quality and workmanship. This instrument has been inspected for proper operation of all of its functions and 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 the seal is unbroken or, in the opinion of the factory, the instrument has not been opened, tampered with, or taken apart.

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

IMPORTANT: For your protection, please use the instrument as soon as possible. If damaged, or should the need arise to return your instrument, place it in a shipping carton packed with sufficient packing material. It must be securely wrapped. Amprobe is not responsible for damage in transit. Be sure to include a packing slip (indicating model and manufacturer number) along with a brief description of the problem. Make certain your name and address appears on the box as well as packing slip.

Ship prepaid via Air Parcel Post insured or U.P.S. (where available) 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. Above limited warranty covers repair and replacement only and no other obligation is stated or implied.

SPECIFICATIONS

Voltage Ranges

0-199.9/750VAC 15KVAC
0-1.999/19.99/199.9/1000VDC 15KVDC
0-1999mV DC

See Note 1 on page 4

Resistance Ranges

0-199.9/1999 ohms
0-19.99/199.9/1999K ohms

Current Ranges

0-1999µA DC
0-19.99/199.9/1999mA DC
0-10 Amps DC
0-19.99/199.9/1999mA AC
0-10 amps AC
NOTE: AC Accuracy may be affected by outside interference.

Temperature

-50°F to +250°F. (-45.6°C to +121°C). See Note 2 on page 5

Accuracy

DCV: ±0.5% of rdg ±2LSD
ACV: ±1.5% of rdg ±2LSD
DC Amps: All ranges ±1.0% of rdg ±2LSD except 10 Amp range, which is ±1.5% of rdg ±3LSD.
AC Amps: All ranges ±1.5% of rdg ±2LSD except 10 Amp range, which is ±2.0% of rdg ±3LSD.
Ohms: All ranges ±0.75% of rdg ±2LSD except 2 megohm range, which is ±1% of rdg ±2LSD.
15 KV AC/DC high voltage probe: add up to ±2% of rdg.

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

°F Range	°C Equivalent	Accuracy
− 50° to − 31°F	− 45.56° to − 35°C	± 1° F
− 30° to + 5°F	− 34.44° to − 15°C	± ½°F
+ 6° to + 100°F	− 14.44° to + 37.78°C	± ½°F
+ 101° to + 130°F	+ 38.33° to + 54.44°C	± ½°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-12 features auto-zeroing on all ranges.

Power Supply (AM-12)

Uses one 9V Alkaline Battery (Cat. MN1604).

Circuit Protection

Micro-amp (µA) and milliamp (mA) ranges are fuse protected up to 600 volts AC/DC maximum with a 6.3X25-2-12 two amp fuse. Do not use substitute fuses. See page 16.

All resistance ranges are overload protected against momentary misapplication of up to a maximum of 500V AC/DC for no longer than ten seconds.

The 10 ampere range is overload protected up to 15 amperes maximum. All voltage ranges are overload protected up to 800VAC and 1100VDC.

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. 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 2. 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 11.*

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

**Accessory is not supplied with the basic AM-12 instrument.

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.**

(continued on next page)

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.

GENERAL

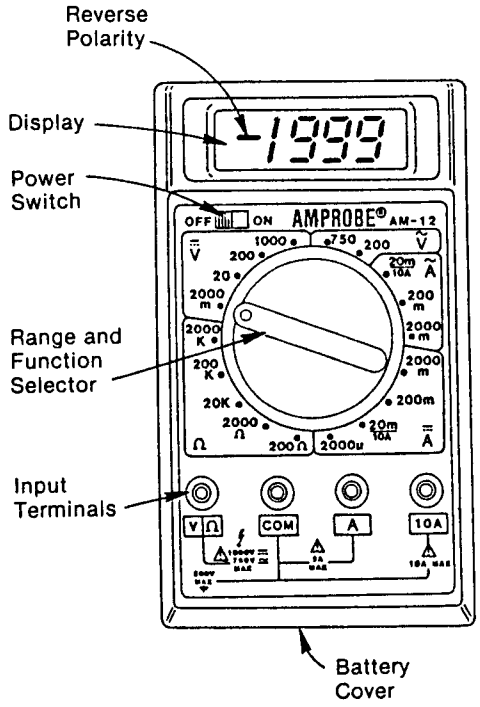
To install the battery (9 volt alkaline cat. no. MN1604), turn instrument face down and remove battery cover by sliding out. Snap battery into connector, place battery into compartment and replace cover.

To turn the AM-12 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-12 is designed, labelled and color-coded to simplify its operation and to minimize 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



Low Battery Indication

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

Over-range Indication

Over-range (an input which is too large for the selected range) is indicated when "1" without any other number appears in Most Significant Digit position (the first digit on the left of the display). A decimal may or may not appear with the "1" depending on the selected range.

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 5)

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/Ω" jack.
4) Place one test prod on each side of the AC voltage.
5) If meter reading falls within the range of a lower scale, move selector switch to the lower range.

For 15KVAC, see Note 1 on page 4 and instructions on page 9.

DC VOLTAGE MEASUREMENT (See Operating Precautions on page 5)

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/Ω" 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 range of a lower scale, move selector switch to the lower range.

For 15KVDC, see Note 1 on page 4 and instructions on page 9.

HIGH VOLTAGE PROBE 15KV (See Operating Precautions on page 5)

1) To use accessory High Voltage Probe Model HV-2 with the AM-12, 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 in to "COM" jack on AM-12 and fasten the other end of the lead to "ground" of circuit being tested.
5) Plug HV-2 Probe (with resistor installed) into "V/Ω" 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 5)

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 1μA 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 readings 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 range of a lower scale, move switch to a lower range.

RESISTANCE MEASUREMENTS (See Operating Precautions on page 5)

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 for 200Ω range. This range will indicate resistance of test lead, which is less than 1Ω.
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 range of a lower scale, reset selector switch to the lower range.

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-12			AM-12		
°F	K Ohms	°C	°F	K Ohms	°C
–50	55.89	–45.56	–45	45.98	–42.78
–49	53.71	–45.00	–44	44.52	–42.22
–48	51.66	–44.44	–43	42.58	–41.67
–47	49.68	–43.89	–42	40.95	–41.11
–46	48.85	–43.33	–41	39.45	–40.56

AM-12 °F		°C
−40	37.94	−40.00
−39	36.54	−39.44
−38	35.19	−38.89
−37	33.89	−38.33
−36	32.65	−37.78
−35	31.45	−37.22
−34	30.31	−36.67
−33	29.20	−36.11
−32	28.16	−35.56
−31	27.12	−35.00
−30	26.15	−34.44
−29	25.21	−33.89
−28	24.31	−33.33
−27	23.45	−32.78
−26	22.62	−32.22
−25	21.83	−31.67
−24	21.05	−31.11
−23	20.32	−30.56
−22	19.60*	−30.00
−21	18.92	−29.44
−20	18.26	−28.89
−19	17.63	−28.33
−18	17.03	−27.78
−17	16.44	−27.22
−16	15.89	−26.67
−15	15.34	−26.11
−14	14.83	−25.56
−13	14.31	−25.00
−12	13.83	−24.44
−11	13.37	−23.89
−10	12.92	−23.33
−9	12.49	−22.78
−8	12.07	−22.22
−7	11.68	−21.67
−6	11.29	−21.11
−5	10.92	−20.56
−4	10.56	−20.00
−3	10.21	−19.44

*Indicates range change.

AM-12 °F	K Ohms	°C
−2	9.88	−18.89
−1	9.56	−18.33
0	9.25	−17.88
1	8.95	−17.22
2	8.67	−16.67
3	8.38	−16.11
4	8.12	−15.56
5	7.85	−15.00
6	7.61	−14.44
7	7.37	−13.89
8	7.14	−13.33
9	6.92	−12.78
10	6.69	−12.22
11	6.49	−11.67
12	6.29	−11.11
13	6.09	−10.56
14	5.90	−10.00
15	5.72	−9.44
16	5.55	−8.89
17	5.38	−8.33
18	5.21	−7.78
19	5.05	−7.22
20	4.90	−6.67
21	4.75	−6.11
22	4.61	−5.56
23	4.47	−5.00
24	4.34	−4.44
25	4.21	−3.89
26	4.08	−3.33
27	3.96	−2.78
28	3.84	−2.22
29	3.73	−1.67
30	3.62	−1.11
31	3.52	−0.56
32	3.41	0
33	3.31	0.56
34	3.22	1.11
35	3.13	1.67

AM-12 °F	K Ohms	°C
36	3.04	2.22
37	2.95	2.78
38	2.86	3.33
39	2.78	3.89
40	2.71	4.44
41	2.63	5.00
42	2.55	5.56
43	2.48	6.11
44	2.41	6.67
45	2.35	7.22
46	2.28	7.78
47	2.22	8.33
48	2.16	8.89
49	2.10	9.44
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

*Indicates range change.

AM-12 °F	K Ohms	°C
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
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

AM-12		
°F	K Ohms	° C
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
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

AM-12		
°F	Ohms	°C
149	197	65.00
150	194	65.56
151	190	66.11
152	186	66.67
153	182	67.22
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

AM-12		
°F	Ohms	°C
187	96.2	86.11
188	94.5	86.67
189	92.9	87.22
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

AM-12		
°F	Ohms	°C
219	55.7	103.89
220	54.9	104.44
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