Testing for an Intermittent Meter

Many instruments use a large-face meter similar to the one shown in Figure 1. In troubleshooting your instrument, you may get into the situation where there is a question whether the meter is providing the correct response. Indications may range from low readings through intermittent readings to no readings at all.

Figure 1.

The following quick test will determine if the internal connections of the meter are mechanically secure, and at the same time increase the confidence level of the meter performance during troubleshooting procedures.

The test involves externally driving the meter with a DC voltage and monitoring the current with a scope, while lightly tapping the meter with a nonconducting tool (e.g., a pencil with a good eraser).

Test Procedure

1. Hook up the meter as shown in Figure 2. The connections must be secure to avoid inaccurate test results.

2. Set the oscilloscope to DC, the sweep to 0.5 milliseconds/division, and the vertical sensitivity to 1 volt/division.

3. The scope should indicate a 5-volt DC level. If not, then the meter is defective and should be replaced.

4. Tap on the metal terminals on the rear of the meter.

5. If the trace on the scope displays a series of spikes, then the meter has loose internal connections and must be replaced.

Figure 2. Test setup to check for an intermittent meter.

Part Number

Cross-references and Discontinued HP Model Numbers with Recommended Replacements

This Logistics Data Book (formerly "Blue Book") is designed to assist Hewlett-Packard customers with their logistics needs associated with the support of HP products.

There are five main sections to this publication, in the form of cross indexes as listed below.

- HP model numbers to military nomenclature and to national stock numbers.
- Military nomenclature to HP model numbers.
- National stock numbers to HP model numbers.
- Provisioning: HP model numbers to contracts.
- Discontinued HP model numbers with replacement recommendations.

Contact your nearest HP office for information on how to obtain a copy of the HP Logistics Data Book p/n 5952-8253.

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Service Notes from HP relating to personal safety and possible equipment damage are of vital importance to our customers. To make you more aware of these important notes, they are printed on paper with a red border, and the service note number has a "S" suffix. In order to make you immediately aware of any potential safety problems, we are highlighting safety-related service notes here with a brief description of each problem. Also, in order to draw your attention to safety-related service notes on the service note order form at the back of Bench Briefs each appropriate number is highlighted by being printed in color.

A shock hazard may exist on multimeter inputs on 1740As, 1741s, and 1744As with options 034, 035, C09 and H17. The problem occurs when the multimeter input fuse clips (V, Omega, and A) short to the printed circuit board ground trace causing a possible safety hazard when the inputs are improperly fused.

The way to tell if your oscilloscope requires modification is to measure the distance from each side of the DMM case to the edges of the oscilloscope top cover. If the difference in these two measurements is 0.63 inches (1.6 cm) with the DMM offset to the right, a safety hazard does not exist and no action is required. If there is no difference in these measurements, the scope must be modified according to the instructions in one of the following Safety Service Notes:

- 1740-19-S
- 1741A-12-S
- 1744A-5-S

Any of these Safety Service Notes can be ordered with the form at the rear of Bench Briefs.

9874 Digitizer

A shock hazard may exist at the transformer primary in units with serial numbers 1811A01252 thru 1811A01497. These Digitizers may have the transformer hot and neutral primary power leads reversed at the input receptacle. You must verify that the hot lead (white-black-gray) is connected to the center terminal of the fuseholder as shown on service note 9874A-1, which can be ordered with the form at the rear of Bench Briefs.

1336A X-Y DISPLAY

1336A-1A. Serials 1809A and above. Deletion of CRT timer.

1740A OScilloscOpe

3253A ANALOG STIMULUS/RESPONSE
UNIT
3253A-7. All serials. Preventing intermittent and reoccurring ASRU failures.

3455A DIGITAL VOLTOMETER

3478A 5½ DIGIT DMM
3478A-1. All serials. 3478A verification program listing.

3496A SCANNER
3496A-5. Serials 180A00619 and up. New scanner analog board design and new scanner center bar design.

3496A-6. All serials. Replacement paddle pin (H/P part number 1258-0179) changed for use on the 03496-66552 Analog Relay Card.

3702B IF/BB RECEIVER


3712A IF/BB RECEIVER
3712-14. All serials. AM to PM conversion adjustment.

3771A/B DATA LINE ANALYZER
3771A/B-24. HP-IB (option 005) assembly 03771-69041; datecodes below 2013-14. SYNC test point connected to the wrong PCB track.

3779A PRIMARY MULTIPLEX ANALYZER

3779A-23-B. Serials 1936U-00185 and below. Improved reliability change in RFI filter assembly.

3968A INSTRUMENTATION TAPE RECORDER
3968A-20. All serials. Proper procedure for head mounting screws.

4935A TRANSMISSION IMPAIRMENT MEASURING SET

4961A/B PAIR IDENTIFIER FIELD UNIT


5036A MICROPROCESSOR LAB

5312A HP-IB INTERFACE
5312A-4A. All serials. Operational verification using the HP 85A controller.

5328A UNVERSAL COUNTER
5328A-33B. All serials. HP-IB verification program using the HP 85A controller.

HP MODELS 5328A/H99, 5328AF/096, 5328AF/098, 5328A/H42, 5328A/5328A 500 MHz UNIVERSAL COUNTER
5328A-34B. All serials. HP-IB verification program using the HP 85A controller.

5335A UNIVERSAL COUNTER
5335A-7A. All serials. HP-IB verification program using the HP 85A controller.

5335A-10. All serials. Modification to enhance interpolator performance.

5341A FREQUENCY COUNTER
5341A-6. All serials. 74LS replacement part numbers for 74L series TTL ICs.

5342A MICROWAVE FREQUENCY COUNTER
5342A-32A. All serials. HP-IB verification program using the HP 85A controller.

5343A MICROWAVE FREQUENCY COUNTER
5343A-11A. All serials. HP-IB verification program using the HP 85A controller.

5345A ELECTRONIC COUNTER
5345A-19A. All serials. HP-IB verification program for 5345A option 011 using the HP 85A controller.

5345A-22. All options and serial number prefixes. Modification to improve input sensitivity.

5354A AUTOMATIC FREQUENCY CONVERTER
5354A-9. All serials. 74LS replacement part numbers for 74L series TTL ICs.

5360A COMPUTING COUNTER
5360A-11. All serials. Recommended power switch/sample rate control replacement (part number 2100-3891).

5451C FOURIER ANALYZER SYSTEM
5451C-04. Serials 1893 and below. Modification to the clock rate to improve performance.

5501A LASER TRANSUDER

6012A POWER SUPPLY
6012A-4. Serials 2204A00770 and below. Modification to protect +11 V bias supply.

6259B LVR POWER SUPPLY
6259B-4A/6260B-3A/6261B-3A/6268B-3A/6269B-5. All serials. Improved reliability change in RFI filter assembly.

6260B LVR POWER SUPPLY
6259B-4A/6260B-3A/6268B-3A/6269B-5. All serials. Improved reliability change in RFI filter assembly.

6261B LVR POWER SUPPLY
6259B-4A/6260B-3A/6268B-3A/6269B-5. All serials. Improved reliability change in RFI filter assembly.

6268B LVR POWER SUPPLY
6259B-4A/6260B-3A/6268B-3A/6269B-5. All serials. Improved reliability change in RFI filter assembly.

6298B LVR POWER SUPPLY
6259B-4A/6260B-3A/6268B-3A/6269B-5. All serials. Improved reliability change in RFI filter assembly.

6942A MULTIPROGRAMMER

6943A MULTIPROGRAMMER EXTENDER

8411A HARMONIC FREQUENCY CONVERTER
8411A-4A. All serials. 8411A Harmonic Converter sampler diode replacement procedure.

8443A TRACKING GENERATOR-COUNTER

8443A-7. Serials 1821A and below. Modification to marker control assembly to eliminate stop sweep problem in slow scan times.


8444A OPTION 059 TRACKING GENERATOR
8444A-4. Serials 2103A and below except for the following serial numbers 03900, 03982, 03985, 03986, 03987, 03991, 03992, 03995, 03996, 03997, 04002, 04006, 04007, 04008, 04009, 04010. Modification kit to improve frequency response performance for sweep times less than 5 msec/DIV.

8447A/C/D/E/F AMPLIFIERS

8505A NETWORK ANALYZER
8505A-13. All serials. Program modification to prevent a programming anomaly when operating the 8505 with 9845B/C desktop computers.

8557A SPECTRUM ANALYZER

K8747A TRANSMISSION AND REFLECTION TEST UNIT
K8747A-1/R8747A-1/R8747B-1. All serials. Packaging instructions for shipment to HP.

R9747A/B TRANSMISSION AND REFLECTION TEST UNIT
R9747A-1/R8747A-1/R8747B-1. All serials. Packaging instructions for shipment to HP.

9571A — DTS 70
9571A-23. All serials. Information on pulse data using the fastrace program "PROB".

9817A DIGITIZER

10585A METROLOGY PROGRAM PACKAGE
10585-1. Serials 2040 and below. Software correction of program anomaly.

1760A GRAPHICS PLOTTER

64100A LOGIC DEVELOPMENT STATION
64100A-8. Serials 2136A and below and serials 2134G and below. 400 watt power supply upgrade.


6424A EMULATOR SUBSYSTEM
6424A-1A. Emulator Pod repair number prefix 2124A and below. Hardware modification to correct DMA exit.


69602A TIMER PACER CARD
69602A-1. Serials 2042A00280 and below. Hardware modification to prevent oscillation on the +12 V 6948B mainframe unregulated supply.
Service Note Order Form

If you want service notes, please check the appropriate boxes below and return this form separately to one of the following addresses.

Hewlett-Packard
1820 Embarcadero Road
Palo Alto, California 94303

For European customers (ONLY)

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☐ 1336A-1A ☐ 3060A-39A ☐ 3968A-20 ☐ 6012A-4 ☐ 641020A-8
☐ 1740A-17 ☐ 3060A-40 ☐ 4935A-3 ☐ 6259B-4A/630B-3A/ ☐ 641020A-9
☐ 1740-19-S ☐ 3060A-41 ☐ 4935A-4 ☐ 6261B-3A/6260B-3A/ 6269B-5
☐ 1741A-10 ☐ 3060A-42 ☐ 4961A-3 ☐ ☐ 642420A-2

☐ 1742A-3 ☐ 3060A-44 ☐ 5036A-1A ☐ 8411A-4A
☐ 1743A-4 ☐ 3060A-45 ☐ 5312A-4A ☐ 8434A-6
☐ 1744A-3 ☐ 3060A-46 ☐ 528A-3B ☐ 8434A-7
☐ 1744A-5-S ☐ 3253A-7 ☐ 528A-4B ☐ 8443A-8
☐ 3060A-0A ☐ 3455A-20 ☐ 5335A-7A ☐ 8444A-4

☐ 3060A-5B ☐ 3496A-5 ☐ 5341A-6 ☐ 8447F-3
☐ 3060A-7A ☐ 3496A-6 ☐ 5342A-32A ☐ 8505A-13
☐ 3060A-8A ☐ 3702B-45 ☐ 5343A-11A ☐ 8557A-3
☐ 3060A-9A ☐ 3702B-46 ☐ 5345A-19A

☐ 3060A-29A ☐ 3702B-48 ☐ 5354A-9 ☐ R8747B-1
☐ 3060A-32A ☐ 3712-14 ☐ 5360A-11 ☐ 9571A-23
☐ 3060A-35A ☐ 3771A/B-24 ☐ 5451C-04 ☐ 9874A-1
☐ 3060A-37A ☐ 3779A-13A ☐ 5501A-9 ☐ 10585-1
☐ 17604A-1

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