

Errata

Title & Document Type: 1109B High Pass Filter Operating Note

Manual Part Number: 01109-90902

Revision Date: November 1975

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HP References in this Manual

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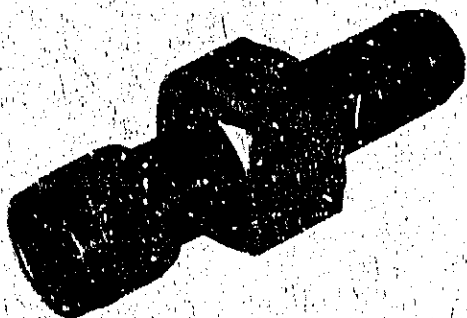


Figure 1. Model 1109B High Pass Filter

1. DESCRIPTION.

2. HP Model 1109B High Pass Filter (Figure 1) is primarily intended for use with HP Model 1104A/1106B Trigger Countdown to eliminate the step pulse display encountered when the Model 1104A/1106B is used in high frequency sampling applications. The Model 1109B may also be used in other 50-ohm system applications where low frequency blocking is desired. Specifications for the Model 1109B High Pass Filter are listed in Table 1.

3. This operating note applies directly to an HP Model 1109B with a serial number prefixed by 1217A. The serial prefix is the first group of digits in the serial number. Always list the complete serial number in any correspondence with Hewlett-Packard Sales/Service Offices.

Table 1. Specifications

<p>LOWER BANDWIDTH LIMIT: 3 dB down at 1 GHz nominal.</p> <p>INPUT CHARACTERISTICS: (with output terminated in 50 ohms).</p> <p>REFLECTION: less than 10% using a 40 ps TDR measuring system.</p> <p>VSWR: 1.1:1 up to 10 GHz increasing to 2:1 at 15 GHz.</p> <p>INPUT IMPEDANCE: 50 ohms \pm2% (shunted across line).</p> <p>MECHANICAL: Precision type N connectors.</p> <p>WEIGHT: net, 5 oz. (140 g), shipping, 2 lb (0.9 kg).</p>

4. CLAIMS.

5. HP guarantees the performance of the instruments as stated in the specifications (Table 1). If the condition

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or performance of the instrument is unsatisfactory upon receipt notify the carrier and the nearest Hewlett-Packard Sales/Service Office immediately. HP will arrange for repair or replacement without waiting for a settlement of the claim with the carrier.

6. APPLICATION.

7. A typical operating setup using Model 1109B in a high frequency sampling application is shown in Figure 2. The high pass filter is connected between the sampler and applicable tunnel diode mount used with the Model 1104A/1106B Trigger Countdown. (Refer to the Model 1104A/1106B/1108A Operating Note.) The filter passes signals above 1 GHz, while blocking lower frequencies. The high pass filter offers a constant 50-ohm impedance to the signal source. The Model 1109B is equipped with connectors that will mate directly with Model 1106B Tunnel Diode Mount connector. When setting up the equipment, ensure that all connections are properly secured. Loose connections can cause undesirable reflections and corresponding signal degradation.

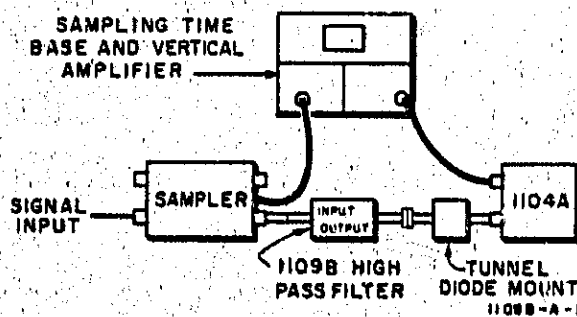


Figure 2. Typical Application

8. PRINCIPLES OF OPERATION.

9. The Model 1109B consists basically of a series capacitance shunted by an inductance and a resistance to form a typical high pass filter network (see Figure 3). When a high frequency signal is applied to the network, the capacitor in the network passes the high frequencies and opposes the low frequencies, while the inductor in the network directs most of the low frequencies to ground, but opposes the high frequencies. The resistance of the network offers a constant 50 ohm impedance to the signal source.

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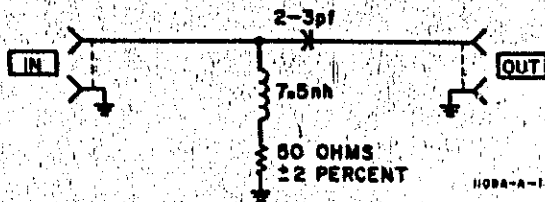


Figure 3. Typical Schematic Diagram

10. PERFORMANCE CHECKS.

11. The recommended test equipment for use in performance checks is listed in Table 2. Equivalent test equipment may be substituted, provided the required characteristics are maintained. Before performing any checks, ensure that the test equipment is in calibration.

Table 2. Test Equipment Required

Recommended Instrument		
Type	HP Model	Required Characteristics
40 ps TDR System Mainframe Sampling Time Base and Vertical Amplifier	180A 1811A	2 ns/div sweep pre-trigger output 20 ps rise-time
Sampler Pulse Gen	1430C 1105A/ 1106B	
Termination	909A (option 012)	50 ohms

12. REFLECTION AND IMPEDANCE CHECKS.

- 13. Set up the equipment as shown in Figure 4.
- 14. Set the 40 ps TDR system controls as follows:
 expanded/direct expanded
 time/div 0.1 ns
 mV/div 50

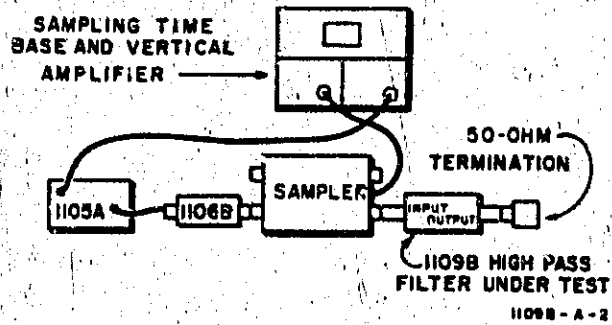


Figure 4. Model 1109B TDR Reflection Measurement

- 15. Adjust mV/div vernier for a pulse 8 div high.
 - 16. Adjust expanded position control to observe reflection. Reflection should be less than 10%.
 - 17. Measure the impedance level after the reflection with respect to the pulse generator impedance level before the reflection. Impedance level after reflection must equal impedance level before reflection $\pm 2\%$ (± 0.16 div).
- 18. SERVICING.**
- 19. Do not attempt to service the Model 1109B High Pass Filter in the field. Due to the intricate procedures involved assembling these units, any repairs required must be made at the factory.

NOTE

Any attempt to disassemble the Model 1109B will void the warranty.

- 20. Return defective Model 1109B High Pass filters to the nearest HP Sales/Service Office for repair.