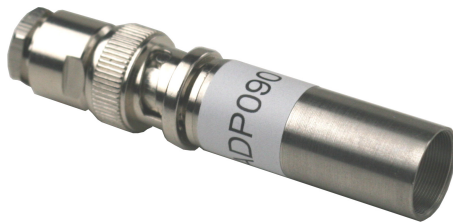


ADP090

Electrical Signal Insert Adaptor Technical Reference Manual



Larson Davis

**ADP090 Electrical Signal Insert Adaptor
1/2" Microphone Equivalent**

Technical Reference Manual

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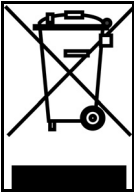
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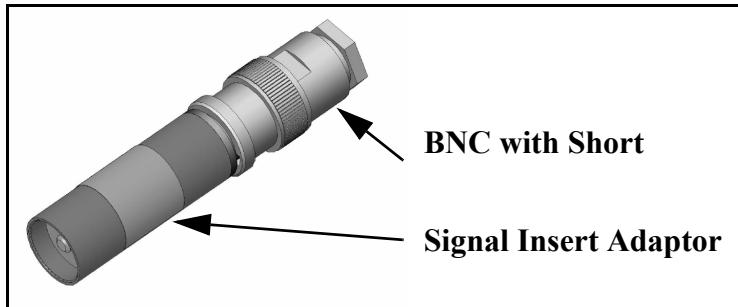
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ADP090 Electrical Signal Insert Adaptor 1/2" Microphone Equivalent



Application

The ADP090 is used in place of a 1/2" microphone for the following:

- Electrical signal insert testing of sound level meters and preamplifiers
- Noise floor testing of instruments

Description

The ADP090 contains a 12 pF Capacitor for electrical signal injection from a signal generator into a preamplifier in place of an acoustical signal. It has a female BNC connector on one end for connection to a signal generator and a 1/2" female microphone thread on the opposite end. This electrical adaptor is used to simulate the electrical characteristics of a microphone with a capacitance near 12 pF. A male BNC with an internal short is included for electrical noise floor testing.

Dimensions: 63.5 mm (2.50") long x 12.7 mm (0.5") diameter

Thread for preamplifier mounting: 11.7 mm-60 UNS (0.4606-60 UNS)

Capacitance: 12 pF $\pm 5\%$

Maximum microphone bias: 250 Volts

Extra Attenuation

The rugged construction of the ADP090 means there is a small capacitance at the preamplifier end of the adaptor. This capacitance results from the physical construction of the adaptor and has a value of about 0.3 pF. It will give added attenuation to the signal since it is in parallel (shunt) across the input of the preamplifier.

When used with the following PCB microphone preamplifiers, there is an extra attenuation as shown in Table 1.

Preamplifier	Extra Attenuation (dB)	Uncertainty k = 2 (dB)
426A10	0.21	0.04
426A11	0.21	0.04
426A12	0.21	0.04
426A30	0.21	0.04
426E01	0.21	0.04
HT426E01	0.21	0.04
PRM831	0.21	0.04
PRM900C	0.21	0.04
PRM902	0.21	0.04
PRMLxT1	0.15	0.04
PRMLxT2	0.05	0.04

Table 1 : ADP090 Extra Attenuation Measured at 1 kHz

Application Example

Example: Using an ADP090, determine the effects of the 426E01 loading on a microphone with capacitance equal to 12 pF.

Step 1 Connect the ADP090 to a 426E01 preamplifier

Step 2 Remove the BNC short

Step 3 Connect the output of a signal generator to the female BNC of the ADP090 and set it to generate a 1 kHz sine wave having an output of 0.500 Vrms.

Step 4 Measure the output signal of the 426E01 and note that it has amplitude of 0.482 Vrms.

Step 5 Compute the difference between the input signal and the measured output signal in dB. $\text{dB} = 20 \cdot \log_{10}(V_{\text{measuredOutput}}/V_{\text{input}}) = -0.32$ for this example. The negative sign indicates attenuation. The total attenuation would be 0.32 dB.

Step 6 Find the ADP090 extra attenuation from Table 1 : 'ADP090 Extra Attenuation Measured at 1 kHz' for the 426E01 preamplifier, which is 0.21 dB.

Step 7 426E01 loading is equal to the measured attenuation minus the losses due to the 0.3 pF capacitance in the ADP090. Thus, the loading is $0.32 - 0.21 \text{ dB} = 0.11 \text{ dB}$.

Other Microphones

For microphones with other capacitance values, use the PCB adaptors indicated in Table 2.

Microphone Capacitance (pF)	Appropriate Adaptor
6.8	ADP002
18	ADP005
47	ADP006

Table 2 : Alternative Adaptors

