ADP002

Electrical Signal Insert Adaptor
Technical Reference Manual

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ADP002 Electrical Signal Insert Adaptor

1/4" Microphone Equivalent

Technical Reference Manual

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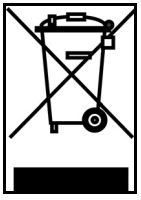

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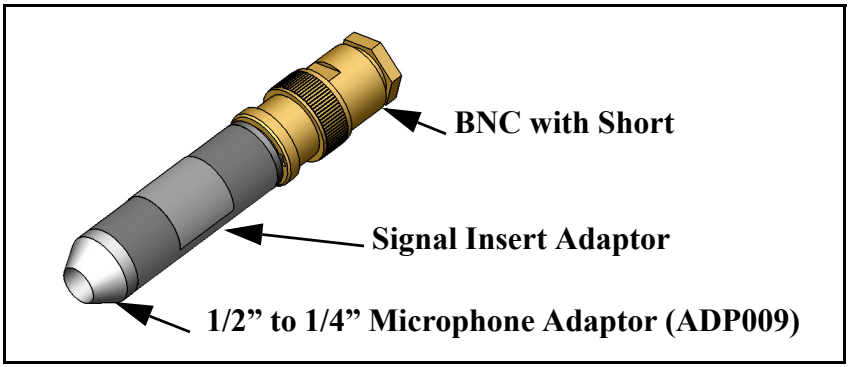

Application

The ADP002 is used in place of a 1/4” microphone for the following:

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

Description

The ADP002 contains a 6.8 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 ¼" female microphone thread on the opposite end. This electrical adaptor is used to simulate the electrical characteristics of a microphone with a capacitance near 6.8 pF. A ½" to ¼" microphone adaptor (ADP009) for use on a ¼" preamplifier and a male BNC with an internal short for electrical noise floor testing are included.

Dimensions: 71.1 mm (2.80") long x 12.7 mm (0.5") diameter

Thread for preamplifier mounting: 5.7 mm-60 UNS (0.2244-60 UNS)

Capacitance: 6.8 pF ±5%

Maximum microphone bias: 250 Volts

Extra Attenuation

The rugged construction of the ADP002 means the 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	0.36	0.04
426A11	0.36	0.04
426A12	0.36	0.04
426A30	0.36	0.04
426B03	0.56	0.10
426B31	0.56	0.10
426E01	0.36	0.04
HT426E01	0.36	0.04
PRM831	0.36	0.04
PRM900C	0.36	0.04
PRM902	0.36	0.04
PRMLxT1	0.21	0.04
PRMLxT2	0.06	0.04

Table 1 : ADP002 Extra Attenuation Measured at 1 kHz

Application Example

Example: using an ADP002, determine the effects of the 426B03 loading on a microphone with capacitance equal to 6.8 pF.

Step 1 Connect the ADP002 to a 426B03 preamplifier

Step 2 Remove the BNC short

Step 3 Connect the output of a signal generator to the female BNC of the ADP002 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 426B03 and note that it has amplitude of 0.459 Vrms.

Step 5 Compute the difference between the input signal and the measured output signal in dB. $dB = 20*\log_{10}(VmeasuredOutput/Vinput) = -0.74$ for this example. The negative sign indicates attenuation. The total attenuation would be 0.74 dB.

Step 6 Find the ADP002 extra attenuation from Table 1 :"ADP002 Extra Attenuation Measured at 1 kHz" for the 426B03 preamplifier, which is 0.56 dB.

Step 7 426B03 loading is equal to the measured attenuation minus the losses due to the 0.3 pF capacitance in the ADP002. Thus, the loading is 0.74 - 0.56 dB = 0.18 dB.

Other Microphones

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

Microphone Capacitance (pF)	Appropriate Adaptor
12	ADP090
18	ADP005
47	ADP006

Table 2 : Alternative Adaptors

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