

ADP006

Electrical Signal Insert Adaptor Technical Reference Manual



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ADP006 Electrical Signal Insert Adaptor
1" Microphone Equivalent

Technical Reference Manual

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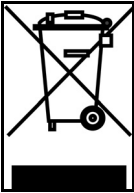
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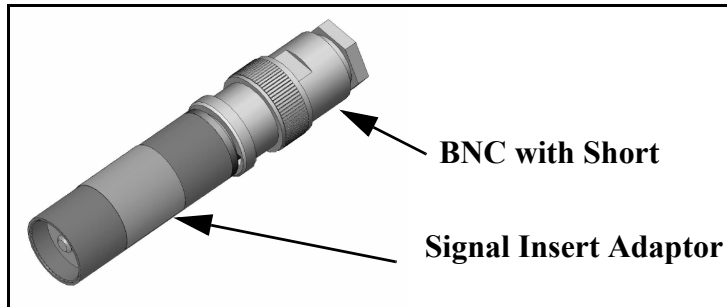
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ADP006 Electrical Signal Insert Adaptor 1" Microphone Equivalent



Application

The ADP006 is used in place of a 1" microphone for the following:

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

Description

The ADP006 contains a 47 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 47 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: 47 pF $\pm 5\%$

Maximum microphone bias: 250 Volts

Extra Attenuation

The rugged construction of the ADP006 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	0.06	0.04
426A11	0.06	0.04
426A12	0.06	0.04
426A30	0.06	0.04
426E01	0.06	0.04
HT426E01	0.06	0.04
PRM831	0.06	0.04
PRM900C	0.06	0.04
PRM902	0.06	0.04
PRMLxT1	0.05	0.04
PRMLxT2	0.03	0.04

Table 1 : ADP006 Extra Attenuation Measured at 1 kHz

Application Example

Example: Using an ADP006, determine the effects of the 426E01 loading on a microphone with capacitance equal to 47 pF.

Step 1 Connect the ADP006 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 ADP006 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 0.493 Vrms.

Step 5 Compute the difference between the input signal and the measured output signal in dB. $\text{dB} = 20 \cdot \log_{10}(\text{V}_{\text{measuredOutput}}/\text{V}_{\text{input}}) = -0.12$ for this example. The negative sign indicates attenuation. The total attenuation would be 0.12 dB.

Step 6 Find the ADP006 extra attenuation from Table 1 : 'ADP006 Extra Attenuation Measured at 1 kHz' for the 426E01 preamplifier, which is 0.06 dB.

Step 7 426E01 loading is equal to the measured attenuation minus the losses due to the 0.3 pF capacitance in the ADP006. Thus, the loading is $0.12 - 0.06 \text{ dB} = 0.06 \text{ dB}$.

Other Microphones

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

Microphone Capacitance (pF)	Appropriate Adaptor
6.8	ADP002
12	ADP090
18	ADP005

Table 2 : Alternative Adaptors

