

ADP005

Electrical Signal Insert Adaptor Technical Reference Manual



Larson Davis

ADP005 Electrical Signal Insert Adaptor
1/2" Microphone Equivalent

Technical Reference Manual

Copyright

Copyright 2008 by PCB Piezotronics, Inc. This manual is copyrighted, with all rights reserved. The manual may not be copied in whole or in part for any use without prior written consent of PCB Piezotronics, Inc.

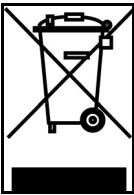
Disclaimer

The following paragraph does not apply in any state or country where such statements are not agreeable with local law:

Even though PCB Piezotronics, Inc. has reviewed its documentation, PCB Piezotronics, Inc. makes no warranty or representation, either expressed or implied, with respect to this instrument and documentation, its quality, performance, merchantability, or fitness for a particular purpose. This documentation is subject to change without notice, and should not be construed as a commitment or representation by PCB Piezotronics, Inc.

This publication may contain inaccuracies or typographical errors. PCB Piezotronics, Inc. will periodically update the material for inclusion in new editions. Changes and improvements to the information described in this manual may be made at any time.

Recycling



PCB Piezotronics, Inc. is an environmentally friendly organization and encourages our customers to be environmentally conscious. When this product reaches its end of life, please recycle the product through a local recycling center or return the product to:

PCB Piezotronics, Inc.

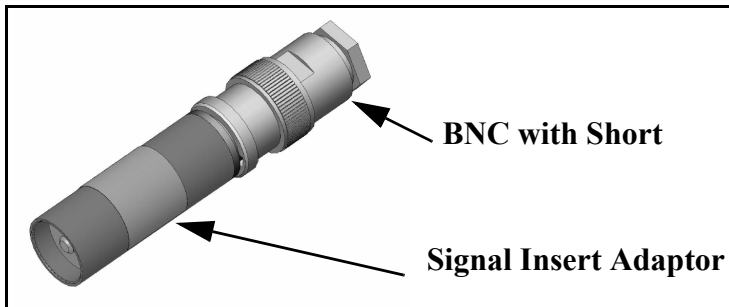
Attn: Recycling Coordinator

1681 West 820 North

Provo, Utah, USA 84601-1341

where it will be accepted for disposal

ADP005 Electrical Signal Insert Adaptor 1/2" Microphone Equivalent



Application

The ADP005 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 ADP005 contains an 18 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 18 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: 18 pF $\pm 5\%$

Maximum microphone bias: 250 Volts

Extra Attenuation

The rugged construction of the ADP005 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	0.14	0.04
426A11	0.14	0.04
426A12	0.14	0.04
426A30	0.14	0.04
426E01	0.14	0.04
HT426E01	0.14	0.04
PRM831	0.14	0.04
PRM900C	0.14	0.04
PRM902	0.14	0.04
PRMLxT1	0.11	0.04
PRMLxT2	0.05	0.04

Table 1 : ADP005 Extra Attenuation Measured at 1 kHz

Application Example

Example: Using an ADP005, determine the effects of the 426E01 loading on a microphone with capacitance equal to 18 pF.

Step 1 Connect the ADP005 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 ADP005 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 0.486 Vrms.

Step 5 Compute the difference between the input signal and the measured output signal in dB. $\text{dB} = 20 \cdot \log_{10}(\text{V}_{\text{measuredOutput}}/\text{V}_{\text{input}}) = -0.25$ for this example. The negative sign indicates attenuation. The total attenuation would be 0.25 dB.

Step 6 Find the ADP005 extra attenuation from Table 1 : 'ADP005 Extra Attenuation Measured at 1 kHz' for the 426E01 preamplifier, which is 0.14 dB.

Step 7 426E01 loading is equal to the measured attenuation minus the losses due to the 0.3 pF capacitance in the ADP005. Thus, the loading is $0.25 - 0.14 \text{ dB} = 0.11 \text{ dB}$.

Other Microphones

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

Microphone Capacitance (pF)	Appropriate Adaptor
6.8	ADP002
12	ADP090
47	ADP006

Table 2 : Alternative Adaptors

