



Acoustic Measurement Products

For Precision Sound Level & Array Measurements

Highlights

- High-temperature (120 °C) 248 °F preamplifier for prepolarized microphones
- Type 1 compliant, modern prepolarized (0 V) microphones
- Type 1 compliant, traditional externally polarized (200 V) microphones
- Value oriented array microphones
- TEDS compliant with IEEE standards

Applications

- Sound power testing
- Engine noise analysis
- Environment noise analysis
- Near-field acoustic holography
- Building noise studies
- Acoustic chamber testing
- Sound pressure mapping



Model HT378B02 is recommended for engine noise analysis.



HT378B02

PCB, the newest innovator for test and measurement microphone systems, is proud to announce its worldwide exclusive HT378B02 system. The HT378B02 is the first IEC compliant microphone and preamplifier combination that has an operating capability to 120 °C (250 °F) that fits into the standard microphone and preamplifier configuration. The HT378B02 is the logical and most justifiable choice for underhood, engine, manifold and other high temperature applications.

PCB® Piezotronics offers a variety of acoustic measurement products, including condenser, modern prepolarized, traditional externally polarized, array, probe, low-profile surface, and special purpose microphones. Microphone products are complemented by an assortment of preamplifiers, signal conditioners, A-weighting filters, handheld calibrators, and accessories.

As a global supplier, PCB® has sold microphones, preamplifiers and acoustic accessories for test and measurement applications to the most respected company names throughout the world. A large number of established automotive, aerospace, military and defense, universities, OEM's, consultants and white goods (appliance) manufacturers have trusted their test requirements to PCB® sensors.

As with all PCB® instrumentation, this equipment is complemented with toll-free applications assistance, 24-hour customer service, and is backed by a no-risk policy that guarantees satisfaction or your money refunded.



Series 377 & 130
Test & Measurement Microphones



Acoustic Measurement Products

Modern Prepolarized and Traditional, Externally-Polarized Precision Condenser Microphones

- Proven ruggedized design
- Exceptional performance in high humidity
- Individually tested for performance
- Meet IEC and ANSI standards
- Can be utilized in Type 1 systems
- Operate from ICP® sensor power (prepolarized)

A wide variety of traditional externally polarized and modern prepolarized free-field, pressure, and random incidence precision condenser microphones are available from PCB®. Externally polarized models operate from a 200 V power source, while prepolarized models can operate from low-cost, constant current (2-20 mA) ICP® sensor signal conditioners and coaxial cables. Prepolarized microphones can also be interchanged with similar ICP® accelerometer set ups.

Modern Prepolarized (0 V) Precision Condenser Microphones

Model Number	377C01	377B02	377C10	377B11	377A12	377A13	377B20
Diameter	1/4 in	1/2 in	1/4 in	1/2 in	1/4 in	1/2 in	1/2 in
Response	Free-Field	Free-Field	Pressure	Pressure	Pressure	Pressure	Random Incidence
Open Circuit Sensitivity (at 250 Hz)	2 mV/Pa	50 mV/Pa	1 mV/Pa	50 mV/Pa	0.25 mV/Pa	12.5 mV/Pa	50 mV/Pa
Frequency Range (± 5%)	5.4 Hz to 80 kHz	3.15 Hz to 20 kHz	4 Hz to 70 kHz	3.15 Hz to 10 kHz	4 Hz to 20 kHz	4 Hz to 20 kHz	3.15 Hz to 12.5 kHz
Polarization Voltage	0 V	0 V	0 V	0 V	0 V	0 V	0 V
Dynamic Range - 3% Distortion Limit [1]	165 dB	146 dB	170 dB	146 dB	187 dB [2]	155 dB	146 dB
Dynamic Range - Cartridge Thermal Noise [1]	28 dB (A)	15 dB (A)	30 dB (A)	15 dB (A)	68 dB (A)	20 dB (A)	15 dB (A)
Operating Temperature	-40 to 120 °C (-40 to 248 °F)	-40 to 120 °C (-40 to 248 °F)	-40 to 120 °C (-40 to 248 °F)	-40 to 120 °C (-40 to 248 °F)	-40 to 120 °C (-40 to 248 °F)	-40 to 120 °C (-40 to 248 °F)	-40 to 120 °C (-40 to 248 °F)
Notes	[1] re 20 µPa [2] with 426B03 preamplifier at 0.25 mV/Pa sensitivity.						

ICP® Preamplifiers for Prepolarized Microphones

These low-noise, general-purpose, prepolarized microphone preamplifiers are powered by any constant current (2-20 mA) ICP® sensor power supply. All models are supplied with TEDS capability and are designed to be used with prepolarized microphones.



Model HT426E01
High Temperature 1/2" ICP® Preamplifier



Model 426E01
1/2" ICP® Preamplifier



Model 426A11
1/2" ICP® Preamplifier with gain and filter switches



Model 426B03
1/4" ICP® Preamplifier



Model 426A10
1/2" ICP® Preamplifier



Preamplifiers

Model Number	426B03	426E01	HT426E01	426A10	426A11
Diameter	1/4 in	1/2 in	1/2 in	1/2 in	1/2 in
Gain (Attenuation)	-0.08 dB	-0.05 dB	-0.06 dB	-0.1 dB	-0.16 dB
Frequency Response (± 0.2 dB)	3 Hz to 126 kHz	6 Hz to 125 kHz	6 Hz to 126 kHz	80 Hz to 125 kHz	5 Hz to 125 kHz
Electrical Noise (A-weight)	< 3.2 µV	< 2.8 µV	< 4.9 µV	< 3.6 µV	< 5 µV [2]
Electrical Noise (Flat) [1]	< 5.6 µV	< 5 µV	< 13.4 µV	< 11.2 µV	< 4.2 µV
Output Voltage (max)	8 V pk	7 V pk	7 V pk	7 V pk	5 V pk
Constant Current Excitation	2 to 20 mA	2 to 20 mA	2 to 20 mA	2 to 20 mA	2 to 20 mA
Operating Temperature	-40 to 70 °C (-40 to 158 °F)	-40 to 80 °C (-40 to 176 °F)	-40 to 120 °C (-40 to 248 °F)	-40 to 80 °C (-40 to 176 °F)	-20 to 70 °C (-4 to 158 °F)
Output Connector	10-32 Jack	BNC Jack	BNC Jack	BNC Jack	BNC Jack
TEDS IEEE P1451.4	Yes	Yes	Yes	Yes	Yes
Notes:	[1] 20 Hz to 20 kHz [2] with AWT switch in ON position				

ICP® Sensor Signal Conditioners



Model 480C02
Battery Powered ICP® Sensor Signal Conditioner



Series 481A
16-channel Line-powered Signal Conditioner (DC power optional)



Model 485B36
USB Dual Channel ICP® Sensor Signal Conditioner

TEDS Microphone & Preamplifier Systems, IEEE 1451.4 Compliant

Mated System Pair	377C01 426B03	377B02 426E01	377B02 HT426E01	377C10 426B03	377B11 426E01	377A12 426B03	377A13 426E01	377B20 426E01
TEDS Version 0.9	378C01	378B02	HT378B02	378C10	378B11	378A12	378A13	378B20
TEDS Version 1.0	TLD378C01	TLD378B02	HTTLD378B02	TLD378C10	TLD378B11	TLD378A12	TLD378A13	TLD378B20



Externally Polarized (200 V) Precision Condenser Microphone Cartridges

Model Number	377B40	377B41	377A42	377A50	377A51	377A53	377A54	377A60
Diameter	1/2 in	1/2 in	1 in	1/8 in	1/4 in	1 in	1/2 in	1/2 in
Response	Free-Field	Free-Field	Free-Field	Pressure	Pressure	Pressure	Pressure	Random Incidence
Open Circuit Sensitivity (at 250 Hz)	12.5 mV/Pa	50 mV/Pa	48 mV/Pa	1 mV/Pa	0.4 mV/Pa	45 mV/Pa	50 mV/Pa	50 mV/Pa
Frequency Range (± 5%)	4 Hz to 40 kHz	3.15 Hz to 20 kHz	2.6 Hz to 20 kHz	6.5 Hz to 140 kHz	10 Hz to 20 kHz	2.6 Hz to 8 kHz	3.15 Hz to 10 kHz	3.15 Hz to 10 kHz
Polarization Voltage	200 V	200 V	200 V	200 V	200 V	200 V	200 V	200 V
Dynamic Range - 3% Distortion Limit [1]	160 dB	146 dB	146 dB	178 dB	192 dB	146 dB	146 dB	146 dB
Dynamic Range - Cartridge Thermal Noise [1]	20 dB (A)	15 dB (A)	10 dB (A)	40 dB (A)	31 dB (A)	10 dB (A)	15 dB (A)	15 dB (A)
Operating Temperature	-40 to 150 °C (-40 to 302 °F)	-40 to 150 °C (-40 to 302 °F)	-40 to 150 °C (-40 to 302 °F)	-40 to 150 °C (-40 to 302 °F)	-40 to 150 °C (-40 to 302 °F)	-40 to 150 °C (-40 to 302 °F)	-40 to 150 °C (-40 to 302 °F)	-40 to 150 °C (-40 to 302 °F)
Notes	[1] re 20 µPa							

Traditional Preamplifiers

Model 426A30 is a rugged 1/2-inch diameter preamplifier optimized for use with externally polarized microphones. It is compatible with microphones as defined in the international standard IEC 61094, and connects to a 200 V power supply requiring a 7-pin cable with LEMO connectors. Model 426A31 is a 1/4-inch diameter preamplifier with integral 3 m (10 ft) cable that terminates with a 7-pin LEMO connector.



Model 426A30
Preamplifier



Model 426B31
1/4" Preamplifier

Microphone Power Supply

- 0 and 200 volt polarization voltage
- Extended battery life (40 hours)
- 0, 20, and 40 dB gain
- Selectable flat (Z), A, and C-weighting



Model 480A25
Microphone Preamplifier
Power Supply

Preamplifiers

Model Number	426B31	426A30
Diameter	1/4 in	1/2 in
Gain (Attenuation)	-0.14 dB	-0.25 dB
Frequency Response (± 0.2 dB)	6 Hz to 126 kHz	0.9 Hz to 126 kHz
Electrical Noise (A-weight)	< 4.8 µV	< 4.5 µV
Electrical Noise (Flat) [1]	< 12 µV	< 7 µV
Output Voltage (max)	50 V pk	14 V pk
Constant Current Excitation	N/A	N/A
Operating Temperature	-20 to 75 °C (-4 to 167 °F)	-40 to 85 °C (-40 to 185 °F)
Output Connector	Integral Cable with 7-pin LEMO	7-pin LEMO
TEDS IEEE P1451.4	Yes	No
Notes	[1] 20 Hz to 20 kHz	

ICP® Array Microphones & Accessories



Model 130D21
(10-32 Connector)



Model 130D20
(BNC Connector)



Model 130D22
(SMB Connector)



Model 130A40
Low Profile
Surface Microphone Pad

ICP® Array Microphones

- Low per channel cost
- Powered from ICP® sensor signal conditioners
- Interchangeable with ICP® accelerometers
- Integrated preamplifier

ICP® Array Microphones with Integral Preamplifier

Model Number	130A40	130D20	130D21	130D22
Microphone Diameter	1/4 in	1/4 in	1/4 in	1/4 in
Response	Pressure	Free-Field	Free-Field	Free-Field
Sensitivity (± 3 dB at 250 Hz)	45 mV/Pa	45 mV/Pa	45 mV/Pa	45 mV/Pa
Frequency Response (± 1 dB)	100 Hz to 4 kHz	100 Hz to 4 kHz	100 Hz to 4 kHz	100 Hz to 4 kHz
Frequency Response (-2, +5 dB)	20 Hz to 10 kHz ± 2dB	20 Hz to 15 kHz	20 Hz to 15 kHz	20 Hz to 15 kHz
Dynamic Range (10 Hz to 10 kHz, ref. 20 µPa)	< 30 to > 122 dB	< 30 to > 122 dB	< 30 to > 122 dB	< 30 to > 122 dB
Polarization Voltage	0 V	0 V	0 V	0 V
Connector	10-32 Jack	BNC Jack	10-32 Jack	SMB



Model 379A01
Array Stand

Powered by standard ICP® sensor signal conditioners, Series 130 ICP® Array Microphones provide a cost-effective method for large-channel count sound pressure measurements. Typical applications include sound pressure mapping, acoustic mode analysis, near field acoustic holography, and beam forming.

Array kits are also available, complete with cables, signal conditioners, and flexible pattern arrays for multi-channel applications. All Array models are available with Transducer Electronic Data Sheet (TEDS) option, compliant with IEEE 1451.4.



High Temperature Probe Microphone

Probe Microphones are compact units designed for use in difficult measurement situations, such as those found in small cavities, harsh environments, close proximity to the sound source, or in high temperatures up to 800 °C (1472 °F). The acoustic signal is guided to the microphone through a detachable, stainless-steel probe. The high acoustic input impedance of the probe tip minimizes its influence on the acoustic field. Probe Microphones are internally compensated to equalize the static pressure at the probe tip with the internal microphone pressure. Model 377A26 is a prepolarized probe with BNC jack output connector.



In-line "A-weighting" Filter

The Model 426B02 in-line A-weighting filter is powered by constant current excitation and is compatible with ICP® microphone preamplifiers. When using this filter, however, a minimum of 4 mA excitation current is required of the ICP® sensor signal conditioner or readout device, which incorporates ICP® sensor power.

Model 426B02
A-weighting Filter



Note: Specifications are subject to change. Check www.pcb.com for current specifications.

Precision Handheld Acoustic Calibrators

PCB® offers calibrators for microphones that meet IEC and ANSI standards. These units are easy to use and available with optional adaptors for use with a variety of microphone diameters. These units are lightweight, portable, and battery operated.



Model CAL200
Acoustic Calibrator



Model CAL250
Acoustic Calibrator



Model 394A40
Pistonphone Calibrator

Precision Calibrators

Model Number	CAL200	CAL250	394A40
Microphone Sizes	1/4", 1/2"	1/8", 1/4", 1/2", 1"	1/8", 1/4", 1/2", 1"
Frequency	1 kHz ± 1%	250 Hz ± 0.8%	250 Hz ± 0.5%
Output Level (re 20 µPa)	94 dB, 114 dB ± 0.2 dB	114 ± 0.1 dB	114 ± 0.08 dB
Barometric Pressure Compensation	Automatic	Automatic	Manual
ANSI S1.40-1984 Compliant	Yes	Yes	N/A
IEC 60942 Class 1	Yes	Yes	Yes
Notes:	* With optional adaptors		

Accessories

(please consult factory for full line)



Nose Cone
079B21



Windscreen
079A06
079A07



Swivel Head Adaptor
079B23



Adaptor
079A02



Microphone Clamp
079A18



Preamplifier Holder
079A11



Microphone Cable
011A10



Microphone Stand
079A15



Total Customer Satisfaction:

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PCB Piezotronics Test & Measurement Acoustic products consists of microphones, preamplifiers, and accessories for noise testing, pressure mapping, holography, NVH, beamforming, arrays and general sound measurements. Additional Test & Measurement Products include pressure, force, load, strain, torque, acceleration, shock, vibration, and electronics. PCB® products are used for product design and development, consumer product testing, quality assurance, civil structure monitoring, research and development, education and engineering applications. All products are backed by our **Total Customer Satisfaction** policy, which guarantees your satisfaction or your money refunded.

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