Agilent Technologies
DSA Accessory Catalog

Vibration, Acoustics, and Control Systems

Completing Your Measurement Solutions

Quality instruments are only part of a complete measurement solution. To get the most from your Agilent Technologies analyzers, you need the right combination of microphones, vibration transducers, and other accessories. In this catalog, you'll find a wide range of products to help you make successful measurements in acoustics, vibration, modal analysis, and other physical test applications.

In order to provide a comprehensive selection of quality accessories, we've included products from both Agilent Technologies and other leading manufacturers. All of the sensors in this catalog have been tested on a variety of Agilent dynamic signals analyzers (DSAs) and real-time analyzers.

Agilent accessories are identified with 6-character part numbers (such as Agilent E3242A). These products carry standard Agilent warranties. Accessories from other manufacturers are identified with either an 8-character or 10-character part number (such as Agilent ACOJ-7012XX). Agilent provides a 90-day, return-to-Agilent warranty on all of these distributed products. In many cases the original equipment manufacturer provides warranty coverage which extends beyond Agilent's 90-day period.

We want you to be successful with every measurement you make. If your applications require specialized transducers or other products not in this catalog, please contact your local Agilent sales representative.

Agilent Technologies
Innovating the HP Way

Instrumentation Microphones and Accessories

These are laboratory quality condenser microphones that are ideal for noise and acoustics measurements with the Agilent DSA series analyzers. The free field units conform to the IEC 1094 specification for Type 1 microphones; the pressure units conform to ANSI S1.4 specification for Type 1 microphones. These ½-inch microphones require the companion preamplifier (Agilent ACOP-4012XX) and a suitable power supply.

Configuration note:
The Agilent ACOP-9200XX is a suitable supply as are the supplies built into option UK4 of the Agilent 35670A. These are all plug compatible with the seven-pin LEMO connector of the Agilent ACOP-4012XX. A number of other manufacturers' power supplies are electrically compatible but require an adapter that must be custom made and is therefore not recommended.

Free Field Microphones

Agilent ACOJ-7046XX
High Sensitivity

Agilent ACOJ-7012XX
Standard Sensitivity

OEM: ACO Pacific
OEM part number 7046 (high sensitivity)
OEM part number 7012 (standard sensitivity)

Pressure Microphone

Agilent ACOJ-7047XX
High Sensitivity

Agilent ACOJ-7013XX
Standard Sensitivity

OEM: ACO Pacific
OEM part number 7047 (high sensitivity)
OEM part number 7013 (standard sensitivity)

Agilent ACOJ-7012XX, Agilent ACOJ-7046XX, Agilent ACOJ-7013XX, Agilent ACOJ-7047XX Specifications

	Agilent ACOJ-7012XX	Agilent ACOJ-7046XX	Agilent ACOJ-7013XX	Agilent ACOJ-7047XX
Nominal Diameter	½ in	½ in	½ in	½ in
Response Type	Free Field	Free Field	Pressure	Pressure
Open Circuit Specifications				
Frequency Response (±2 dB)	3 Hz to 40 kHz	3 Hz to 20 kHz	3 Hz to 20 kHz	3 Hz to 10 kHz
Sensitivity (dB re: 1 V/Pa)	-36 dB 15.8 mV/Pa	-26 dB 50 mV/Pa	-38 dB 12.5 mV/Pa	-28 dB 40 mV/Pa
Dynamic Range (3% THD)	18 to 160 dB	12 to 145 dB	18 to 160 dB	12 to 145 dB
Polarization Capacitance	18 pF	20 pF	18 pF	20 pF
Polarization Voltage	200 Vdc	200 Vdc	200 Vdc	200 Vdc
Temperature Coefficient -10°C to +60°C -30°C to +80°C	 ±0.007 dB/°C <±0.25 dB/°C	 ±0.007 dB/°C <±0.25 dB/°C	 ±0.007 dB/°C <±0.25 dB/°C	 ±0.007 dB/°C <±0.25 dB/°C
Influence of Humidity (at 55°C and 95% noncondensing humidity)	<±0.1 dB	<±0.1 dB	<±0.1 dB	<±0.1 dB
Mechanical Dimensions				
Height of Cartridge with grid without grid	 12.7 mm 11.5 mm	 16.7 mm 15.5 mm	 12.7 mm 11.5 mm	 16.7 mm 15.5 mm
Diameter of Cartridge with grid without grid	 13.2 mm 12.7 mm	 13.2 mm 12.7 mm	 13.2 mm 12.7 mm	 13.2 mm 12.7 mm
Thread for Preamp	12.7 mm 60NS2	12.7 mm 60NS2	12.7 mm 60NS2	12.7 mm 60NS2

Microphone Breakout Box

Agilent E3243A
4-Channel Microphone/
Voltage Breakout Box

This breakout box is specifically designed to operate with the Agilent E1432A and Agilent E1433B VXI input modules.

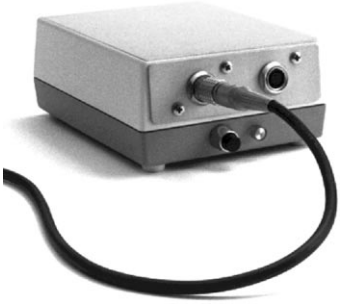
Features:

4 7-pin LEMO connectors
4 BNC voltage connectors
0/200VDC polarization voltage
28V preamp supply
Programmable gain stages 0 dB/20 dB
Channels independently programmable:
- Grounding
- Piezoelectric integrated circuit current supply
- Range
- Mic/voltage function

Microphone Power Supply

Provides 200 V polarization voltage and 28 V power for two microphone/ preamp combinations. Connects to the microphone/preamp via a 7-pin LEMO connector; outputs are BNC to provide convenient interface with instrumentation. Intended for use with the Agilent ACOP-4012XX microphone preamplifier; not required for option UK4 of the Agilent 35670A.

OEM: ACO Pacific
OEM part number PS9200L7*
* Modified for LEMO connectors.



Agilent ACOP-9200XX

Agilent ACOP-9200XX Specifications	
Powers 2 Condenser Microphones/Preamps simultaneously	
Nominal Output to Microphones	200 Vdc for polarization
Nominal Output to Preamp	28 V
Signal Gain	0 dB
Power Source	Single 9-V alkaline battery or dc power supply (optional)
Nominal Battery Life (NEDA 1604A)	20 hours
Input Connectors from Microphone	7-pin LEMO male
Output Connectors to Analyzer	BNC female
Size	3.75 x 2.125 x 5.0 in
Optional ac Power Supply	Agilent F1011A

Microphone Preamplifier

Agilent ACOP-4012XX
shown with microphone

Note: this preamplifier does not provide any gain in signal strength.

Specifically designed for use with the ACOJ series microphones. Supplied with a detachable 2-meter cable terminated in a LEMO connector suitable for direct interface to the Agilent 35670A Opt UK4 microphone adapter and power supply, and the Agilent ACOP-PS9200XX battery-powered power supply.

OEM: ACO Pacific
OEM part number 4012L7HP

Agilent ACOP-4012XX Specifications	
Power	28 Vdc @ 1 mA (nominal)
Insertion Loss (@ 22pF source)	0.15 dB (typical)
Frequency Response (@ 22pF source)	2 Hz to 200 kHz ±0.5 dB
Broadband Noise (@ 22 pF source)	<1.2 µV A weighted (typical)
Size (dia. x length)	0.5 x 5.2 in 12.7 x 132.1 mm
Cable Supplied	2 m, detachable at preamp, terminated with 7-pin LEMO connector (Agilent 35212A)

Microphone Calibrator

Provides 94 dB SPL and 104 dB SPL (± 0.3 dB) reference tone at 1 kHz (± 1.5 %) for in situ calibration. Distortion is less than 1%. Meets or exeeceds requirements of IEC 942 for Class 1L and Class 2. Powered by a single 9-V battery and supplied with ½- and ¼inch microphone adapter. Operating temperature -10°C to +50°C.

OEM: ACO Pacific
OEM part number 511E

Agilent ACOP-511EXX

Miniature Accelerometer

Very low mass (2 grams) and wide frequency range (10 kHz) make this ideal for general vibration applications, including structural analysis and general shock measurements. Supplied with adhesive mounting base; you can stud mount via the 5-40 stud permanently mounted to base. Includes mounting wax, 10-foot cable, manual, and case.

OEM: PCB Peizotronics
OEM part number 353B16

Agilent PCBI 353A16

General Purpose Accelerometer

Relatively low mass and high sensitivity (100 mV/g) make this an ideal choice for general applications that require strong signal levels and for lower amplitude vibration tests that require increased resolution. Popular for testing small and medium structures such as machine tools and pumps. Includes 10-foot cable, adhesive mounting base, mounting stud, mounting wax, manual, and case.

OEM: PCB Peizotronics
OEM part number 353B34

Agilent PCBI-353A24

Agilent PCBI-353A16 and Agilent PCBI-353A24 Specifications

	Agilent PCBI-353A16	Agilent PCBI-353A24
Range (±5V output)	500 g_{pk}	50 g_{pk}
Resolution (broadband)	0.005 g_{rms}	0.0005 g_{rms}
Sensitivity	10 mV/g (± 10%)	100 mV/g (± 5%)
Resonant Frequency (mounted)	>70 kHz	>22 kHz
Frequency Range (±5%)	1 to 10000 Hz	1 to 4000 Hz
Frequency Range (±10%)	0.7 to 20000 Hz	0.7 to 7000 Hz
Frequency Range (<5 degrees phase shift)	not specified	not specified
Discharge Time Constant	>0.5 s	>0.5 s
Amplitude Linearity	±1 %FS	±1 %FS
Output Impedance	<100 Ω	<100 Ω
Output Bias	8 to 14 V	8 to 14 V
Transverse Sensitivity	≤5%	≤5%
Base Strain Sensitivity	≤0.002 g/µin/in	≤0.0002 g/µin/in
Temperature Range	-65 to 250 °F	-65 to 250 °F
Temperature Coefficient	<0.03%/°F	<0.03 %/°F
Shock (max)	10,000 g_{pk}	10,000 g_{pk}
Size (hex x height)	9/32 x 0.68 in (7.14 x 17.2 mm)	3/4 x 1.26 in (19.1 x 32.0 mm)
Size (diameter x height)	NA	NA
Thread Size for Stud	5-40	10-32
Case Material	Titanium	Titanium
Connector	5-44 coax	10-32 coax
Sealing	welded	welded
Weight	1.5 g	27 g
Ground Isolation	no	no
Excitation (constant current)	2 to 20 mA	2 to 20 mA
Excitation Voltage	18 to 30 Vdc	18 to 30 Vdc

Hammer Kits

Designed for impact testing of small structures, a convenient way to measure structural behavior for modal analysis. When used with an Agilent 35670A analyzer, the frequency response of the structure can be measured and saved for later analysis.

Each kit includes an instrumented hammer and two accelerometers. The hammer has a built-in load cell to measure the force applied to the structure during impact. The accelerometers measure the structure's response. Two accelerometers are provided in each kit, one with wide frequency range and the other with high sensitivity. Accessories include required cabling (two 10 ft. cables), a selection of hammer tips, and mounting wax.

Agilent PZT291M4 - 0.3 pound shown here
Agilent PZT291M5 - 3 pound (not shown)

0.3-Pound Modal Analysis Hammer Kit

Includes one hammer with built-in load cell and two accelerometers. One accelerometer is low mass (0.7 grams) and has a sensitivity of 10 mV/g; the other has a mass of 2.0 grams and a sensitivity of 100 mV/g.

OEM: PCB Piezotronics
OEM part number 291M77 (Kit)
OEM part number 352C68 (Accelerometer)
OEM part number 352A10 (Accelerometer)

3-Pound Modal Analysis Hammer Kit

Includes one hammer with built-in load cell and two accelerometers. One accelerometer is general purpose with a sensitivity of 100 mV/g and a 25 gram weight, one is high sensitivity of 1000 mV/g for low frequency, low amplitude applications.

OEM: PCB Piezotronics
OEM part number 291M79 (Kit)
OEM part number 352A (Accelerometer)
OEM part number 353B33 (Accelerometer)

Control Systems Accessories

These accessories let you inject signals into your feedback control systems, such as disk drives, power supplies, AGC, and PLL circuits. You can characterize loop gain using E/A, Y/S, Y/Z, or other measurement techniques. Compatible with a wide range of network and dynamic signal analyzers, including the Agilent 35670A, 35665A, 3562A, 3563A, 3566A/67A, and 3577B.

Summing Junction

Agilent 35280A

The Agilent 35280A summing junction allows you to float the injected signal source from ground up to ±42V.
You can also attenuate the source gain by -20 dB. Includes the required line power module.

Agilent 35280A Specifications	
Frequency Range: (<10° phase shift)	dc-1MHz
Voltage Range:	±10 V_{pk}
Maximum Float Voltage:	±42 V_{pk}
Gain:	1 (0 dB)
Input Impedance:	100 kΩ
Output Impedance:	<15 Ω
Source attenuator:	0 dB or -20 dB

Clip-on Transformer

The Agilent 35281A clip-on transformer lets you inject a test signal into higher frequency servo control loops and other feedback loops, such as AGC circuits and switch mode power supplies. This transformer lets you clip-on to an existing lead for injecting a test signal without physically breaking the circuit.

Agilent 35281A

Agilent 35281A Specifications	
Frequency Range: (typical)	300 Hz-10 MHz (roll-off <6 dB)
Max. Source Primary Voltage for harmonics <-40 dBc	
300 Hz:	0.1 V_{pk} (typical)
5 kHz:	5 V_{pk} (typical)
Max. Secondary Float Voltage:	± 42 V_{pk}
Primary to Secondary Turns Ratio:	100 to 1 (-40 dB ± 1.5 dB at 100 kHz)

Signal Injection Transformer

The Agilent 35282A signal injection transformer allows you to inject signals into your control loops which have large offsets from ground. This device allows offsets of up to ±600 V_{pk}, and provides signal attenuation of 0 or -20 dB.

Agilent 35282A

Agilent 35282A Specifications	
Frequency Range:	30 Hz-200 kHz (roll off <6 dB)
Max. Source Primary Voltage for harmonics <-40 dBc	
30 Hz:	0.05 V_{pk} (typical)
1 kHz:	5 V_{pk} (typical)
Max. Secondary Float Voltage:	± 600 V_{pk}
Primary to Secondary Turns Ratio:	1 to 1 (0 dB ± 0.1 dB at 1 kHz)
Source Attenuator:	0 dB or -20 dB
Primary to Secondary Common Mode Response (at 1 kHz):	<-100 dB

Cables, Connectors & Accessories

Handheld Accelerometer Calibrator

Permits rapid calibration and verification of vibration measurement and monitoring systems that use accelerometers weighing up to 210 grams. Rugged suspension and built-in mechanical stops avoid overload damage and prolong calibrator life.

OEM: PCB Peizotronics
OEM part number 394C06

Agilent PCBI-394B05

Agilent PCBI-394B05 Specifications	
Frequency (±1%)	159.2 Hz
Acceleration (±3%)	1.0 g_{rms}
Velocity (±4%)	0.39 in/s
Displacement (±5%)	9.81 mil
Transverse Amplitude (relative to main axis)	≤3%
Distortion: 0 to 100 gram load 100 to 210 gram load	 ≤2% ≤3%
Temperature Range	15 to 130 °F
Power Required	4 AA alkaline batteries
Size (diameter x height)	2.2 x 7.8 in
Weight	900 g
Mounting Threads	10-32 female*

*Contact Agilent Technologies for other configurations.

Accelerometer Adhesive Mounting Base

For adhesively mounting accelerometers to test surface. Protects sensor from adhesive, allowing easy removal. Hard coating provides electrical isolation between the test object and the accelerometer. Intended for the Agilent PCBI-353A24 and Agilent PCBI-336M32 accelerometers; includes 10-32 stud.

OEM: PCB Piezotronics
OEM part number 080A12

Agilent PCBI-080A12

BNC-to-Microdot Adapter

Adapts BNC jack to a 10-32 coaxial jack.

Agilent PCBI-070A02

OEM: PCB Piezotronics
OEM part number 070A02

Microdot Coax Cable

Low noise cable is 10 feet in length and terminates in to male 10-32 coax connectors. It is Teflon coated and operates in temperature as high as 500 °F.

OEM: PCB Piezotronics
OEM part number 003A10

Agilent PZT003A1

Agilent PZT003A1 Specifications	
Insulation	Fep Teflon
Cable Capacitance	30 pF/ft
Temperature	to 500 °F
Connectors	10-32 coax male

Charge Amp Breakout Box

This breakout box is specifically designed to operate with Agilent's E1432A and the E1433B VXI input modules.

Agilent E3242A 4-Channel Charge/Voltage Breakout Box

Features:

4 BNC connectors
4 microdot connectors
Programmable 2 kHz lowpass filter
Channels independently programmable:
- Grounding
- Piezoelectric integrated circuit current supply
- Range
- Charge/voltage function
- 2 kHz lowpass filter

Mounting Wax

Petro wax forms quickly to irregular surfaces for easy temporary mounting. Thickness of wax affects frequency response; for best results, keep thickness to a minimum. Contains four sample squares.

Agilent PCBI-080A24

OEM: PCB Piezotronics
OEM part number 080A24

Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlay Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for extra-cost upgrades and on-site education and training, as well as design, system integration, project management, and other professional services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

Products from G.R.A.S., PCB and ACO Pacific available in earlier DSA Accessory Catalogs are available from The Modal Shop, Inc. at 800-860-4867, www.modalshop.com or ACO Pacific at 650-595-8588, www.acopacific.com,

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Data subject to change.

Printed in the U.S.A. 6/00
5980-1846E

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