Multi-channel Signal Conditioners

For Conditioning ICP® and Charge Output Pressure, Force, and Vibration Sensors

- Simultaneously Condition up to 16 Input Channels
- Adjust Set-Up Parameters via Computer Control*
- Daisy-Link Multiple Racks for up to 256 Channels*
- Apply Gain, Filtering, Integration, Switching*

* Available features

Series 481A and Series 498A
Multi-channel Signal Conditioners

Multi-channel piezoelectric sensor signal conditioners are cost-effective instruments which prepare multiple measurement signals for recording or analysis. Versions to accommodate either ICP® sensors, or both charge output and ICP® sensors, are available. Each unit is housed in a standard, 19-inch, rack-mountable chassis.

The building-block design easily permits configuring a unit with appropriate features to suit a particular requirement. Several pre-configured models include some of the more popular features and are available for quick delivery.

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.

PCB PIEZOTRONICS INC.
ELECTRONICS DIVISION

Total Customer Satisfaction Guaranteed

INPUT/OUTPUT OPTIONS

084 Selectable ICP® sensor or direct voltage input per channel: (manually selected via jumper position on the internal circuit board).

284* Same as option 084 except selectable by computer or front panel.

082 Accepts both piezoelectric charge output sensor and ICP® sensor inputs. Adds one coaxial 10-32 charge output sensor input for each channel, each with 0.1 mV/pC charge-to-voltage conversion and 5 Hz (-5%) LF response, one BNC ICP® sensor input for each channel, and input mode selector switch (all on rear panel).

182 Same as option 082 except with 0.5 Hz LF response

282* Same as option 082 except selectable by computer or front panel.

382* Same as option 082 except selectable by computer or front panel and 0.5 Hz (- 5%) LF response for charge sensor input.

086 Accepts both piezoelectric charge output sensor and ICP® sensor inputs. Adds one coaxial 10-32 charge output sensor input for each channel, each with 1 mV/pC charge-to-voltage conversion and 5 Hz (-5%) LF response, one BNC ICP® sensor input for each channel, and input mode selector switch (all on rear panel).

186 Same as option 086 except with 0.5 Hz LF response

286* Same as option 086 except selectable by computer or front panel.

386* Same as option 086 except selectable by computer or front panel and 0.5 Hz (- 5%) LF response for charge sensor input.

087 Accepts both piezoelectric charge output sensor and ICP® sensor inputs. Adds one coaxial 10-32 charge output sensor input for each channel, each with 10 mV/pC charge-to-voltage conversion and 5 Hz (-5%) LF response, one BNC ICP® sensor input for each channel, and input mode selector switch (all on rear panel).

187 Same as option 087 except with 0.5 Hz LF response

287* Same as option 087 except selectable by computer or front panel.

387* Same as option 087 except selectable by computer or front panel and 0.5 Hz (- 5%) LF response for charge sensor input.

486*† Accepts both piezoelectric charge output sensor and ICP® sensor inputs. Adds one coaxial 10-32 charge output sensor input for each channel, each with selectable 0.1, 1.0, and 10 mV/pC charge-to-voltage conversion, one BNC ICP® sensor input for each channel, and input mode selector switch (all on rear panel).

686* Same as option 486 except for use with single-ended, high temperature, charge output sensors at temperatures >500 °F (260 °C).

782* Accepts both differential charge output sensor and ICP® sensor inputs. Adds one twin BNC differential sensor input for each channel, each with 0.1 mV/pC charge-to-voltage conversion and 5 Hz (-5%) LF response, one BNC ICP® sensor input for each channel, and input mode selector switch (all on rear panel).

786* Same as option 782 except with 1.0 mV/pC charge-to-voltage conversion.

787* Same as option 782 except with 10 mV/pC charge-to-voltage conversion.

041* Switched outputs (Dual 16-to-1 for 481A, Dual 8-to-1 for 498A): two BNC outputs added to rear panel, each accommodating the switched outputs.

080 Connector configuration: one BNC input per channel added to rear panel.

085 Connector configuration: one BNC output per channel added to rear panel.

081 Connector configuration: one BNC input per channel and one BNC output per channel added to rear panel.

GAIN OPTIONS

031 Internal fixed gain of x5 (substituted for standard gain of x1).

032 Internal fixed gain of x10 (substituted for standard gain of x1).

035* Programmable gain of x1, x10, x100 (total device gain becomes the internal fixed gain x the programmable gain setting). Includes auto-ranging.

037* Programmable, incremental gain control of x0.1 to x200 (times fixed gain x1 only). (Gain between x0.1 to x200 incremented in steps of 0.1). Includes auto-ranging and normalization.

038* Expanded, programmable, incremental gain control x0.0025 to x200 (Gain between x0.0025 to x9.9975 incremented in steps of 0.0025) (Gain between x10.000 to x99.975 incremented in steps of 0.025) (Gain between x100.00 to x200.00 incremented in steps of 0.25). Includes auto-ranging and normalization.

039* Programmable, continuous extended fine gain, x0.0025 to x1000. Includes auto-ranging and normalization.

CONTROL OPTIONS

101* RS-232 and RS-485 computer interface (serial port). Includes Model EE-75 Control Software for PCB Series 481A and Series 498A. Two D-Sub 9-pin communication connectors on rear panel. This feature is required for all options indicated with (*).

070* IEEE-488 computer interface (parallel port).

103* Front panel display and keypad for local control.

FREQUENCY AND FILTERING OPTIONS

013* Selectable discharge time constant of 2 or 10 seconds across all channels simultaneously. (May also be expressed as a selectable high pass filter with -3 dB @ 0.08 Hz (2 sec) or -3 dB @ 0.015 Hz (10 sec).

050 Fixed low pass filter, -3 dB @ 2 kHz.

051 Fixed low pass filter, -3 dB @ 10 kHz.

056 Fixed low pass filter, -3 dB @ 20 kHz.

052 Fixed low pass filter, -3 dB @ 100 kHz.

053 Fixed low pass filter, -3 dB @ 150 kHz.

054 Fixed low pass filter, -3 dB @ 200 kHz.

055 Fixed low pass filter, customer-defined.

All fixed low pass filters are fourth-order Butterworth type with -80 dB/decade roll off. The filter is applied simultaneously across all channels and may be user enabled or disabled.

157* Programmable, low pass filter, -3 dB @ 2 Hz to 21.4 kHz with > 500 steps. Eighth-order Elliptical type. Enable / disable capability.

158* Programmable, low pass filter, -3 dB @ 2 Hz to 20 kHz with > 500 steps. Eighth-order Butterworth type. Enable / disable capability.

ARITHMETIC FUNCTION OPTIONS

061* Integration to velocity and displacement: provides selected velocity or displacement output signal at switched output connector for switch-selected channel of interest (requires switched output option 041). Example: for a 100 mV/g ICP® sensor input, you can output a velocity signal of 1000 mV/in/sec or a displacement signal of 200 mV/mil.

062 Integration to velocity output signals for all input channels simultaneously. Example: for each 100 mV/g ICP® sensor input there is an output velocity signal of 100 mV/in/sec. The feature may be user enabled or disabled.

064 DC output signal: each channel provided with a 0 to 5 VDC output signal, proportional to the RMS value of the analog input signal, provided on an additional BNC output per channel on rear panel.

065 Metric integration to velocity output signals for all input channels simultaneously. eg: for each 100 mV/g ICP® sensor input, there is an output velocity signal of 100 mV/m/sec. The feature may be user enabled or disabled.

OTHER OPTIONS

012* Internal calibration / test signal source: Fixed frequency (100 Hz), adjustable amplitude (0.1 to 2 V pk to pk). Delivered simultaneously across all input channels and monitored at each output connector. Includes option 014 (external calibration signal input connector (BNC) for input of user defined test signals of up to 2 V pk to pk).

014* External calibration signal input connector (BNC) for input of user defined test signals of up to 2 V pk to pk.

020* Programmable overload limit: provides adjustable threshold of overload indication from 1 to 10 V pk to pk (in 1V increments).

102* Memory default: retains user settings upon power-down.

104* TEDS - ability to read information from and write information to TEDS sensors (UTID1 format).

Notes:

Some options are incompatible and cannot be ordered together in the same unit (e.g., option 081 is incompatible with 082, 086, or 087). Contact the factory for assistance with configuring compatible options.

(*) Computer interface option 101 is required and must be ordered in conjunction with all options indicated with *. Option 101 includes Model EE-75 software (also available separately), which permits set-up and control with a Windows based PC.

(†) 0.5 Hz (-5%) LF response for 0.1 and 1.0 mV/pC setting and 5.0 Hz (-5%) LF response for 10 mV/pC setting.

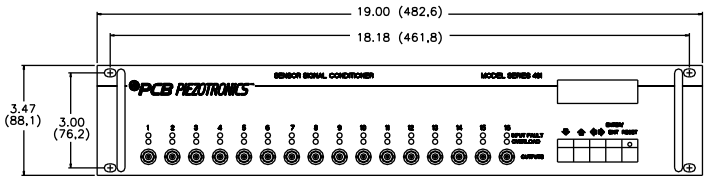
Feature Selection Chart

To order a custom configured unit, indicate preference of either Series 481A (16-channel) or Series 498A (8-channel) base model, and select the option numbers desired as a suffix to the base model. For example, 16-channel Model 481A with options 481-101, 481-103, 481-038, and 481-102 designates a 16-channel unit unit with RS-232/RS-485 computer interface, menu display with keypad control, incremental gain control, and setup parameter memory retention options. Preconfigured models cannot be customized.

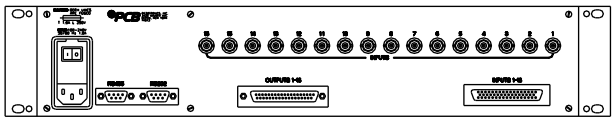
Channel Count			Base Model	Preconfigured Models			
16-channels			481A	481A01	481A02	481A03	
8-channels			498A	498A01	498A02	498A03	498A30
Standard Features Included with Base Model							
Enclosure	Size 19 x 16.25 x 3.50 in. (Rack Mountable)		✔	✔	✔	✔	✔
Input Type	ICP® Sensor		✔	✔	✔	✔	✔
Excitation Current	Adjustable from 3 to 20 mA (for ICP® Sensor)		✔	✔	✔	✔	✔
LED (Red)	Input Fault Monitoring		✔	✔	✔	✔	✔
LED (Yellow)	Overload Detection		✔	✔	✔	✔	✔
Gain	Fixed Gain x1		✔	✔	✔	✔	✔
Connectors	Rear Panel	One DB50 Female Input	✔	✔	✔	✔	✔
	Rear Panel	One DB37 Female Output	✔	✔	✔	✔	✔
	Front Panel	One BNC Jack Output Per Channel	✔	✔	✔	✔	✔
Power Required	100 to 240 VAC, 47 to 63 Hz, 0.6 A		✔	✔	✔	✔	✔
Optional Features for Configurable Models							
Input Sensor Type	Jumper Selectable ICP® Sensor or AC Voltage Signal Input		084				
Input Sensor Type	Panel/Computer Selectable ICP® Sensors or AC Voltage Signal		284*				
Input Sensor Type	Switch Selectable Charge or ICP® Sensors, 5 Hz LF		082, 086, 087				
Input Sensor Type	Switch Selectable Charge or ICP® Sensors, 0.5 Hz LF		182, 186, 187				
Input Sensor Type	Panel/Computer Selectable Charge or ICP® Sensors, 5 Hz LF		282*, 286*, 287* 686*, 782*, 786*, 787*				✔ (286)
Input Sensor Type	Panel/Computer Selectable Charge or ICP® Sensors, 0.5 Hz LF		382*, 386*, 387*, 486*†				
Output Switching	Dual output switching, 16-to-1 or 8-to-1 (two output BNC's added)		041*				
Connectors (added):	Rear Panel	One BNC Jack Input Per Channel	080	✔	✔	✔	
(includes standard):	Rear Panel	One DB50 Female Input		✔	✔	✔	
	Rear Panel	One DB37 Female Output		✔	✔	✔	
	Front Panel	One BNC Jack Output Per Channel		✔	✔	✔	
Connectors (added):	Rear Panel	One BNC Jack Output Per Channel	085				
(includes standard):	Rear Panel	One DB50 Female Input					
	Rear Panel	One DB37 Female Output					
	Front Panel	One BNC Jack Output Per Channel					
Connectors (added):	Rear Panel	One BNC Jack Input Per Channel	081				
	Rear Panel	One BNC Jack Output Per Channel					
(includes standard):	Rear Panel	One DB50 Female Input					
	Rear Panel	One DB37 Female Output					
	Front Panel	One BNC Jack Output Per Channel					
Gain	Fixed Gain of x5 (substituted for standard gain of x1)		031				
Gain	Fixed Gain of x10 (substituted for standard gain of x1)		032				
Gain (Auto Ranging)	Selectable Gain of x1, x10, x100 (times fixed gain)		035*		✔		
Gain (Auto Ranging)	Incremental Gain of x0.1 to x200 (times unity gain only)		037*				
Gain (Auto Ranging)	Incremental Gain of x0.0025 to x200 (times unity gain only)		038*			✔	✔
Gain (Auto Ranging)	Incremental Gain of x0.0025 to x1000 (times unity gain only)		039*				
Filtering, High Pass	Selectable Discharge Time Constant of 2 or 10 sec		013*				✔
Filtering, Low Pass	Fixed Low Pass Filters		050 through 056				✔ (051)
Filtering, Low Pass	Programmable 8th-Order Elliptical (2 Hz to 21.4 kHz, >256 steps)		157*			✔	
Filtering, Low Pass	Programmable 8th-Order Butterworth (2 Hz to 20 kHz, >256 steps)		158*				
Control	RS-232 and RS-485 Serial Computer Interface and Control Software		101		✔	✔	✔
Control	IEEE-488 Parallel Computer Interface		070*				
Control	Front Panel Menu Display with Keypad Control		103*		✔	✔	✔
Integration	Velocity and Displacement to Switched Outputs		061*§				
Integration	Velocity Output Each Channel (100 mV/g : 100 mV/in/sec)		062				
Integration	Metric Velocity Output Each Channel (100 mV/g : 100 mV/m/sec)		065				
Function	RMS Conversion, 0-5 VDC on added rear panel outputs		064				
Calibration	Internal Calibration Signal and External Cal Input Connector		012*			✔	
Calibration	External Calibration Signal Input Connector		014*				✔
Overload	Programmable Overload Threshold		020*			✔	
Memory	Retains User Settings Upon Power-down		102*		✔	✔	✔
TEDS	Reads and Writes TEDS Sensor Data		104*				

Notes: **(*)** Computer interface option 101 must also be ordered in conjunction with this option.
(§) Switched output option 041 must also be ordered in conjunction with this option.
(✔) Designates included feature or option.
Consult factory for additional customization options.

Front View

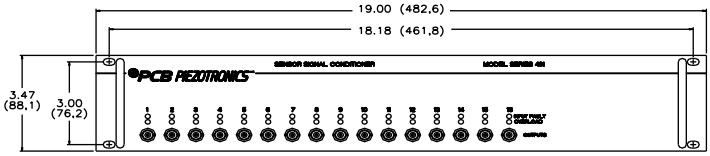


Rear View

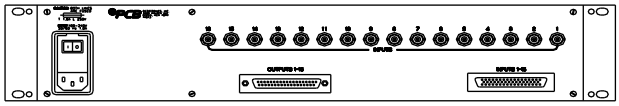


Series 481A with options 080, 101, and 103

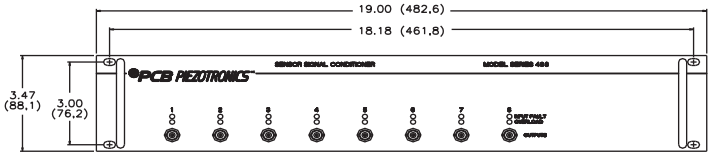
Front View

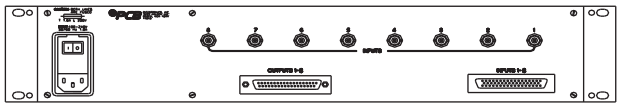


Rear View



Series 481A with option 080





Series 498A with options 080, 101, and 103

CE These products conform to applicable European Directives for CE marking.

Series 481A
16-channel configuration

Series 498A
8-channel configuration

Optional Accessories:
Model 488A05 Power Inverter, 12 VDC to 115 VAC, 60 Hz.

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The Electronics Division of PCB® Piezotronics, Inc. specializes in the development, application, and support of signal conditioners, cables, and accessories for a wide variety of sensor interfacing requirements. This product focus, coupled with the strengths and resources of PCB, permits the Electronics Division to offer exceptional customer service, 24-hour technical assistance, and a **Total Customer Satisfaction** guarantee.

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