

OPERATING GUIDE

Seismic Accelerometer

Model 393B12

PCB[®]
PIEZOTRONICS

Letter Prefix Codes for Product Model Numbers

(define options and system kits)

Letter prefixes often appear in model numbers of PCB products. These prefixes refer to various options available with standard products. More than one prefix may appear in a product model number, for example: HSM113A21 (Model 113A21 pressure sensor with 'H' hermetic seal, 'S' stainless steel diaphragm and 'M' metric mounting thread). Letter prefixes may also indicate a sensor is being supplied in a system kit with power unit, cables and accessory hardware items - complete, ready to connect and operate (e.g. K353B01 accelerometer kit includes sensor, battery powered signal conditioner, cables and accessories).

PREFIX	DESIGNATION
A	Adhesive mount version of sensor; supplied with Petro Wax and "quick-bonding" gel (miniature accelerometers have the integral stud removed).
B	Low bias sensor for reduced voltage and current levels (e.g., B353B04).
D	Dummy sensor for display purposes (e.g., D339B01).
DKL	484B06 line power supply with DC coupling sensor kit (e.g., DKL208B05).
E	Emralon coated sensor for ground isolation or corrosion resistance (e.g., E106B).
F	Operates with 210V to 240V (50 to 500 Hz) line power (e.g., F482A16).
FM	Factory Mutual Approved; intrinsically safe (e.g., FM328F01).
GK	480E09 battery power supply with gain x1, x10, x100 sensor kit (e.g., GK353B02).
GKL	482B11 line power supply with gain x1, x10, x100 sensor kit (e.g., GKL338A01).
GKR	Rechargeable 480E09 with NiCad batteries and 488A02 charger sensor kit (e.g., GKR352A10).
GDKL	484B11 line power (DC coupling and gain x1, x10, x 100) sensor kit (e.g., GDKL208B02).
H	Hermetically sealed sensor (e.g., H112A).
J	Ground Isolated - Sensor w/ integral electrical ground isolating construction (e.g., J353B33).
K	480C02 battery power supply sensor kit (e.g., K359B33).
KL	482A06 basic line power supply sensor kit (e.g., KL338B35).
KR	Rechargeable 480C02 with NiCad batteries and 488A02 charger sensor kit (e.g., KR112A23).
*M	Metric mounting thread or metric adaptor stud (e.g., M338B34).
N	Negative polarity output signal; for sensors normally having positive polarity output (e.g., N112A21).
P	Positive polarity output signal; for sensors normally having negative polarity output (e.g., P357B03).
Q	Extended time constant for low frequency and/or shock applications (Q353B32).
R	Recharge option; includes 488A02 charger and NiCad batteries (e.g., R480E06).
S	Stainless steel diaphragm (e.g., S112A).
T	Momentum trap for some pressure sensors (e.g., T102A). Acts as a stress wave absorber to prevent connector damage.
U	Useable sensor; operational unit but out of spec.
V	Indicates version of a standard model number (e.g., V337F22/050C is a Model 337F22 with a 50 ft integral cable terminating in a BNC plug).
W	Waterproof cable attachment (e.g., W353B34/002A100C is a 353B34 accelerometer with 100 ft. type 002 cable. A standard 10-32 coaxial plug is sealed to the sensor with heat shrink and terminates as a BNC plug.
X	Experimental Model.

* When the letter 'M' appears in the middle of a model number, it designates a special or modified version of a standard product (e.g., 353M223) and is generally not listed in published literature. Contact factory for "special" model number details.

NOTE: Prefixes including the letter 'K' are sensor and power kits supplied with a 10 ft input cable, power unit, with 3 ft output cable terminating in BNC and vinyl kit storage case. Input cable lengths up to 50 ft of cable styles 002, 007, 012, 018 and 031 may be specified at no additional charge.

Operating Guide for Model 393B12 Seismic Accelerometer

Note: This special high resolution, low frequency accelerometer requires up to 5 minutes for turn on and stabilization.

Be sure to read this instrumentation manual thoroughly before use or installation of instrumentation.

If you have any questions or problems on the use of this product, please call one of our applications engineers at PCB's toll-free number: 1-800-828-8840.

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DYNAMIC PERFORMANCE

Voltage Sensitivity
Measurement Range (for ±5 V output)
Frequency Range: (±5%)
(±10%)
(±3 dB)
Mounted Resonant Frequency
Phase Response: ±5° (at 70°F [21°C])
Broadband Resolution (1 Hz to 10 kHz)
Amplitude Linearity
Transverse Sensitivity

ENVIRONMENTAL

Shock Limit - All Axes (maximum)
Operating Temperature Range
Temperature Response
Strain Sensitivity

ELECTRICAL

Excitation Voltage/Constant Current
Output Impedance
Output Bias
Discharge Time Constant
Warm-Up Time (within 10% of output bias)
Spectral Noise: (1 Hz)
(10 Hz)
(100 Hz)
(1 kHz)

Ground Isolation

MECHANICAL

Sensing Element
Housing
Size (hex x height)
Weight
Electrical Connector
Mounting Thread (female)
Mounting Torque

OPTIONAL VERSIONS

Optional versions have identical specifications and accessories as listed for the standard model except where noted by the letter: prefixes below. More than one option may be used.

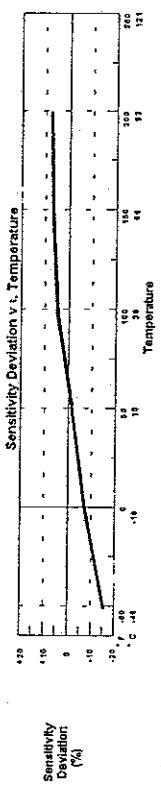
M - Metric Mount
Modify Accessories: (1) Model M081B20 Stud replaces (1) Model 081B20

NOTES:

- [1] Zero based best straight line method.
- [2] Transverse sensitivity is typically ≤5%.
- [3] Accuracy of temperature response is within ±3%.
- [4] Acceleration level equivalent.

SUPPLIED ACCESSORIES:

- 081B20 Mounting Stud (1)
- 085A31 Protective Thermal Jacket
- NIST Traceable Calibration Certificate
- ACS-4 Calibration Certificate



In the interest of constant product improvement, we reserve the right to change specifications without notice.



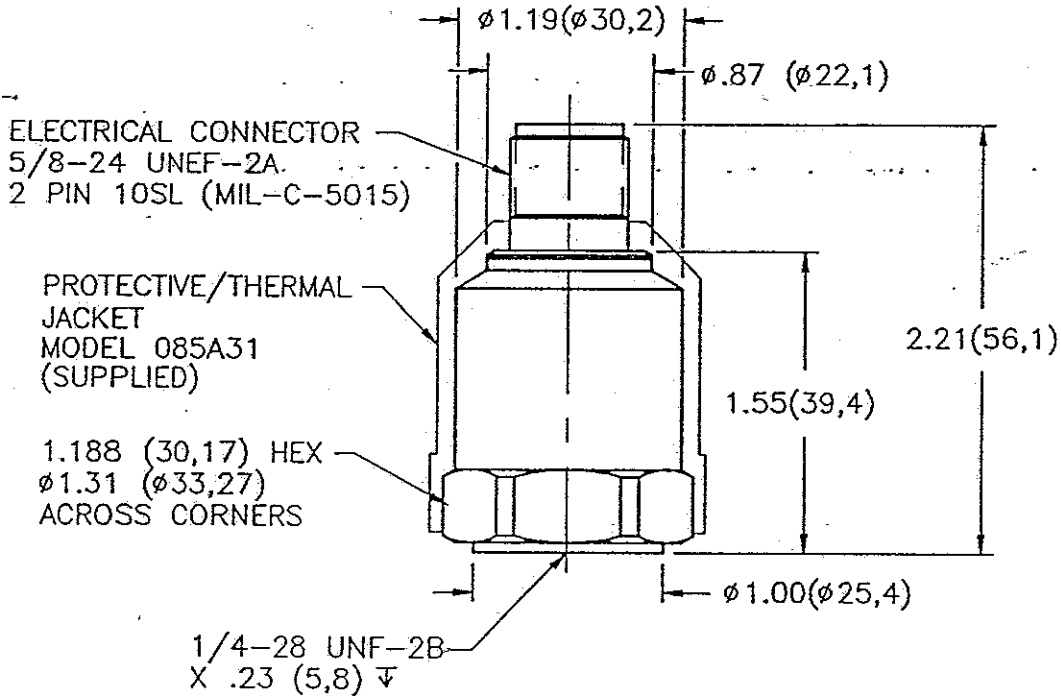
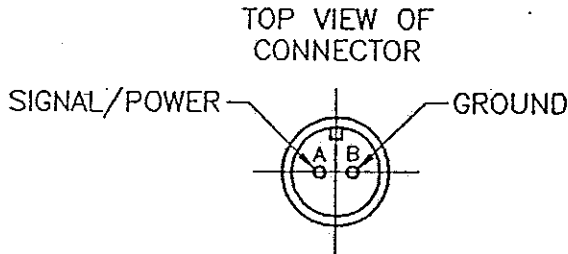
ICP® is a registered trademark of PCB Piezotronics, Inc.

Drawn: [Signature]	Engineer: [Signature]	Sales: [Signature]	Approved: [Signature]	Spec Number:
Date: 2/21/97	Date: 4/1/97	Date: 4/2/97	Date: 4/1/97	393-2120-80

393-2120-95

APPLICATION		
NEXT ASS'Y	USED ON	VAR

REVISIONS				
REV	DESCRIPTION	ECN	DATE	APP'D



UNLESS SPECIFIED TOLERANCES

DIMENSIONS IN INCHES	DIMENSIONS IN MILLIMETERS (IN PARENTHESIS)
DECIMALS XX ±.01	DECIMALS X ±0,3
XXX ±.005	XX ±0,13
ANGLES ±2 DEGREES	ANGLES ±2 DEGREES

FILLETS AND RADII .003 - .005 (0,07 - 0,13)

DRAWN	JDH	8/11/93	MFG	J.S.	8/11/93
CHK'D	DM	8/11/93	ENGR	DS.	8/11/93
APP'D				DAL	8/11/93

TITLE
OUTLINE DRAWING
MODEL 393B12 SERIES
ACCELEROMETER

PCB PIEZOTRONICS, INC.
3425 WALDEN AVE. DEPEW, NEW YORK 14043
PHONE: (716) 684-0001

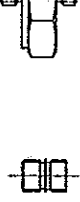
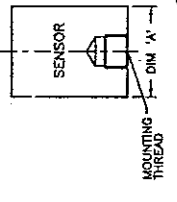
CODE	DWG. NO.
IDENT. NO. 52681	393-2120-95

SCALE: FULL SHEET 1 OF 1

081-XXXX-90

APPLICATION USED ON VAR

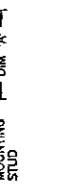
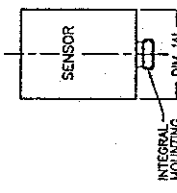
STANDARD STUD MOUNT



STANDARD STUD MOUNTING STUD/PAD (081A21 ONLY)

STUD MODEL	SENSOR THREAD	MOUNTING THREAD	SEE DRAWING
081A27	5-40	5-40	A
M081A27	5-40	M3 X 0.50	B
081B05	10-32	10-32	C
M081B05	10-32	M6 X 0.75	F
M081B20	1/4-28	1/4-28	D
M081B23	10-32	M5 X 0.80	D
081A08	10-32	1/4-28	E
081M24	10-32	5-40	A
081A21	10-32	10-32	C
M081A61	1/4-28	M6 X 1.00	F
M081A92	10-32	M6 X 1.00	F
081A39	10-32	10-32	C
081A40	1/4-28	1/4-28	E

INTEGRAL STUD MOUNT



"THRU-BOLT" MOUNT

BOLT MODEL	BOLT LENGTH	BOLT THREAD	SEE DRAWING
081A25	.63(16.0)	10-32	C
081A50	.80(20.3)	10-32	C
081A51	.87(22.1)	10-32	C
M081A25	(16.0) .63	M5 X 0.80	D
M081A50	(20.3) .80	M5 X 0.80	D
M081A51	(22.1) .87	M5 X 0.80	D
081A55	1.00(25.4)	10-32	C
081A56	.75(19.1)	1/4-28	E
081A57	1.00(25.4)	1/4-28	E
M081A58	(25.4) 1.00	M6 X 1.00	F
M081A59	(20.0) .75	M6 X 1.00	F
M081M94	(30.0) 1.18	M6 X 1.00	F
081M96	1.12(28.4)	1/4-28	E
M081M96	(28.0) 1.10	M6 X 1.00	F

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5-40 MOUNTING INSTRUCTIONS
(METRIC DIMENSIONS IN PARENTHESIS)

MOUNTING HOLE PREPARATION:
DRILL #.101(2.57) Δ
X .20(5.1) ∇ MIN.
TAP 5-40 UNC-2B
X .115(3.0) ∇ MIN.

4.) RECOMMENDED TRANSDUCER MOUNTING TORQUE, 4-5 INCH POUNDS(45-55 NEWTON CENTIMETERS).

10-32 MOUNTING INSTRUCTIONS
(METRIC DIMENSIONS IN PARENTHESIS)

MOUNTING HOLE PREPARATION:
DRILL #.150(4.04) Δ
X .30(7.62) ∇ MIN.
TAP 10-32 UNC-2B
X .115(3.0) ∇ MIN.

4.) RECOMMENDED TRANSDUCER MOUNTING TORQUE, 10-20 INCH POUNDS(13-25 NEWTON CENTIMETERS).

M3 X 0.50 MOUNTING INSTRUCTIONS
(ENGLISH DIMENSIONS IN PARENTHESIS)

MOUNTING HOLE PREPARATION:
DRILL #.150(4.04) Δ
X .30(7.62) ∇ MIN.
TAP M3 X 0.50-8H
X 3.3(.13) ∇ MIN.

4.) RECOMMENDED TRANSDUCER MOUNTING TORQUE, 45-55 NEWTON CENTIMETERS(4-5 INCH POUNDS).

M5 X 0.80 MOUNTING INSTRUCTIONS
(ENGLISH DIMENSIONS IN PARENTHESIS)

MOUNTING HOLE PREPARATION:
DRILL #.228(5.8) Δ
X .45(11.43) ∇ MIN.
TAP M5 X 0.8-8H
X 5.08(200) ∇ MIN.

4.) RECOMMENDED TRANSDUCER MOUNTING TORQUE, 113-225 NEWTON CENTIMETERS(10-20 INCH POUNDS).

M6 X 0.75 & M6 X 1.00 MOUNTING INSTRUCTIONS
(ENGLISH DIMENSIONS IN PARENTHESIS)

MOUNTING HOLE PREPARATION:
DRILL #.228(5.8) Δ
X .45(11.43) ∇ MIN.
TAP M6 X 0.75-8H
X 5.08(200) ∇ MIN.

4.) RECOMMENDED TRANSDUCER MOUNTING TORQUE, 113-225 NEWTON CENTIMETERS(10-20 INCH POUNDS).

M6 X 1.00 MOUNTING INSTRUCTIONS
(ENGLISH DIMENSIONS IN PARENTHESIS)

MOUNTING HOLE PREPARATION:
DRILL #.228(5.8) Δ
X .45(11.43) ∇ MIN.
TAP M6 X 1.00-8H
X 5.08(200) ∇ MIN.

4.) RECOMMENDED MOUNTING TORQUE ON .875(22.23) HEX, 2-5 FOOT POUNDS(3-7 NEWTON METERS).

M6 X 0.25 MOUNTING INSTRUCTIONS
(ENGLISH DIMENSIONS IN PARENTHESIS)

MOUNTING HOLE PREPARATION:
DRILL #.531(13.49) Δ
X .170(4.30) ∇ MIN.
TAP M6 X 0.25-8H
X 10.00(254) ∇ MIN.

4.) RECOMMENDED MOUNTING TORQUE ON .22(3.875) HEX, 3-7 NEWTON METERS(2-5 FOOT POUNDS).

- 3.) FOR BEST RESULTS, PLACE A THIN LAYER OF SILICONE GREASE (OR EQUIVALENT) ON INTERFACE PRIOR TO MOUNTING.
- Δ MOUNTING SURFACE SHOULD BE FLAT TO WITHIN .001(0.03) TH OVER DIM 'A' WITH A MINIMUM $6\frac{3}{4}$ (1.67) FINISH FOR BEST RESULTS.
- ∇ DRILL PERPENDICULAR TO MOUNTING SURFACE TO WITHIN \pm 1.

NOTES: (METRIC DIMENSIONS IN PARENTHESIS)

REV	DESCRIPTION	ECN	DATE	APP'D
D	REVISED PER ECN	5321	11/9/94	DM 1/94
E	REVISED PER ECN	6007	18/22/95	DM 8/22
F	REVISED PER ECN	8210	11/10/95	DM 11/95
G	REVISED PER ECN	7223	10/23/96	DM 10/96
H	REVISED PER ECN	7675	13/14/97	DM 3/97

DRAWINGS NOT TO SCALE

UNLESS SPECIFIED TO LEAVESSE DIMENSIONS IN INCHES
DIMENSIONS IN MILLIMETERS

DECIMALS XX \pm 0.1
XXX \pm 0.05
ANGLES \pm 2 DEGREES
FILLET AND RADIUS
R.031 - .013

INSTALLATION DRAWING FOR STANDARD 081 SERIES MOUNTING

UNLESS SPECIFIED TO LEAVESSE DIMENSIONS IN INCHES
DIMENSIONS IN MILLIMETERS

DECIMALS XX \pm 0.1
XXX \pm 0.05
ANGLES \pm 2 DEGREES
FILLET AND RADIUS
R.031 - .013

PCB PIEZOTRONICS, INC.
3415 WALDO AVE. DEPT. NEW YORK 14443
PHONE (716) 841-0801

CODE 52681
DRAWING NO. 081-XXXX-90
SCALE: 1=1.5 SHEET 1 OF 1

Model 393B12

1.0 INTRODUCTION

The Model 393B12 Accelerometer is a rugged ground-isolated seismic accelerometer designed specifically for use in very low level vibration applications where environmental conditions may vary. Applications include vibrations in buildings and other structures induced by earth tremors, heavy equipment, machinery, etc. The sensitivity is 10V/g. The full scale range of the Model 393B12 for ± 5 volts is ± 0.5 g's.

2.0 DESCRIPTION

Hermetically sealed, this electron beam welded transducer contains self-generating piezoelectric elements consisting of a seismic mass acting upon x-cut crystals. A large, two-pin, military-type connector 5/8-24 (MIL-C-5015) is mounted at the top of the transducer.

The output from the piezoelectric element is fed to an integrated circuit hybrid charge amplifier which converts the high impedance charge from the crystals to a low impedance voltage. The signal is then fed to an ICP power supply and directly out to a readout device such as a digital voltmeter, recorder, oscilloscope, etc. Producing high level, low impedance signals, the unit is able to drive long cables with virtually no attenuation. Input power and output signals are conducted over a two-conductor cable. The 393B12 is inherently protected against accidental overloads and shocks up to 500 g.

Refer to Guide G-0001, "General Guide to ICP Instrumentation" for a more thorough treatment of the ICP (Integrated Circuit Piezoelectric) concept.

3.0 INSTALLATION

Refer to Installation Drawing at the front of this manual for details on mounting hole preparation. It is important that the threads of the mounting stud provided do not bottom in either the mounting surface or the accelerometer base. This possibility is averted by a depth-limiting collar on the mounting stud which fits into a recess in the accelerometer base. A tapped hole prepared in accordance with the instructions on the installation drawing will insure that the stud cannot bottom in the mounting structure.

To effect good high frequency transmissibility from the mounting surface to the base of the accelerometer, it is important to prepare a flat mounting surface with a good machine finish (a lapped surface is desirable). Avoid the inclusion or burrs or other foreign objects which may preclude the intimate contact necessary between the two mating surfaces. Epoxy can be used at the mounting interface for a more permanent installation. However, caution should be exercised to prevent too much epoxy from getting into the screw threads. Damage to the accelerometer may result if excessive torque must be applied to remove it.

The simplest procedure for installation is as follows:

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Model 393B12

1. Thread the mounting stud into the accelerometer base as far as it will go hand tight.
2. Check mounting surface and the accelerometer base for cleanliness.
3. Rotate the accelerometer/stud assembly into tapped mounting hole; using a torque wrench on the hex (1.17 in.), torque to 2 to 5 foot pounds.
4. Connect cable to accelerometer tightly by hand.

Other means of mounting the accelerometer are by the use of an Adhesive Mounting Base, Model 080A13, or Magnetic Mounting Base, Model 080A05. The adhesive base is bonded to the test surface by epoxy or other adhesives.

The magnetic mounting base is designed for use where it is not possible to drill and tap a mounting hole on the test surface. The static, magnetic field does not interfere with the current flow in the accelerometer.

The 011A10 output cable (RG58/U) is recommended for maximum noise immunity during signal transmission. In favorable environments, use of any 2-wire cable with the MIL-C-5015, 5/18-24 connector will suffice.

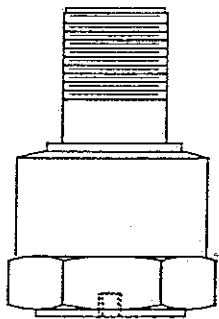


Figure 1
Model 393B12 Accelerometer

4.0 POWERING

PCB constant current power units have the necessary signal conditioning for proper operation of the 393B12 Accelerometer. These power units provide the correct power, have circuit bias indicating meters and a bias decoupling capacitor to remove the bias voltage from the signal. Although most power units have unity gain, some models are available with built-in variable gain able to be increased by factors of 10 to 100.

Optional PCB power supplies are available with buffered output for driving low input impedance readout devices.

Model 393B12

Purchasers are advised to power transducers only with PCB or approved units. Damage to the built-in electronics because of incorrect application of power is not covered by warranty. PCB carries a broad line of economical power and signal conditioners for powering the Model 393B12. For OEM systems, PCB will assist purchaser in designing their own power equipment. Consult General Guide G-0001 for additional information on ICP powering alternatives. Figure 2 is a schematic diagram of the basic Constant Current Power unit.

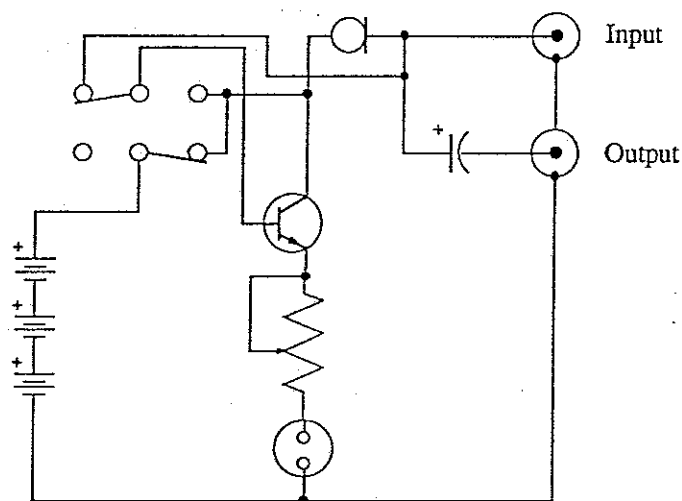


Figure 2
Basic Constant Current Power Unit

5.0 OPERATION

The following precautions should be observed before operating the equipment.

1. Use only with PCB approved constant-current power/signal conditioners. If another type of power unit is used, do not energize the unit without constant-current protection.
2. Maximum allowable current is 20mA.
3. Maximum allowable supply voltage is 30V.
4. Observe maximum shock and vibration levels listed in specifications.
5. Observe care not to overtorque (max 5 ft. lbs.) accelerometer when mounting.
6. Do not subject units to temperatures above 180°F.

Connect equipment using cables and connectors as illustrated in Figure 3.

Model 393B12

Switch power on and allow 5 minutes for the output coupling capacitor to charge. During charging of this capacitor, the output will appear to be drifting.

Observe bias monitoring voltmeter (most PCB power units display this meter on the front panel). When supplied with power through 2 to 20mA constant current source, the amplifier will normally display a 12-volt bias level at the output terminal. The output signal is superimposed upon the DC bias level and is decoupled by the 10uF capacitor. The bias meter will indicate an approximate mid-scale (green) reading for normal amplifier operation and cable continuity. A full scale (yellow) meter reading indicates a faulty amplifier or an open cable or cable connection. A zero voltage (red) reading indicates a shorted amplifier or a shorted cable connection. In this manner the meter is actually used as a go, no-go system fault indicator.

5.1 LOW FREQUENCY RESPONSE

The low frequency response is determined by the Discharge Time Constant that is the product of the total shunt resistance R and capacitance C across the crystal (see specification sheet at the front of this manual).

The time constant of the Model 393B12 is set at approximately 3.5 seconds, a value large enough to maintain a lower 10% down frequency of 0.1 Hz. To take advantage of the low frequency response afforded by the 3.5 second Discharge Time Constant of the transducer when used with most PCB power supplies, the input resistance of the readout instrument should be kept to at least 1 megohms. This resistance minimizes the effect of the output capacitor in the power unit (see Section 5.3). Loads, down to 2K ohms, may be fed without low frequency response degradation by using the PCB 484B Power Unit. (See General Guide G-0001, Section 6.0, for more details on Low Frequency Response.)

5.2 HIGH FREQUENCY RESPONSE

The High Frequency Response of piezoelectric accelerometers is described by the characteristic curve of a second order system with essentially zero damping. The High Frequency Response has a rising characteristic with increasing frequency. The output will rise to approximately 5% above reference sensitivity at 1000 Hz.

5.3 READOUT CONSIDERATIONS.

Many PCB power units and Power Conditioners contain a tanalytic coupling capacitor as shown in Figure 2. This capacitor, acting in conjunction with the input impedance of the readout instrument, constitutes a high pass filter. If the impedance of the readout instrument is low enough, the filter will determine the low frequency characteristics of the total system.

Model 393B12

The Discharge Time Constant of the Power Supply/Readout Instrument coupling circuit should be at least ten times (35 seconds) the Discharge Time Constant of the transducer for it not to affect the low frequency response of the 393B12.

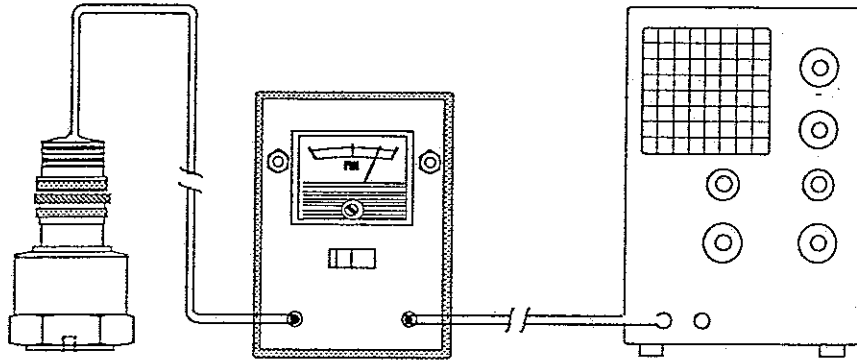


Figure 3
Typical Configuration of Cables And Connectors

6.0 CALIBRATION

The Model 393B12 Accelerometer is calibrated at PCB by using a NIST traceable reference system over the frequency range of 5 Hz to 1000 Hz. The reference sensitivity is measured at 100 Hz per ISA RP 37.2. PCB offers recalibration services for a nominal charge. Contact the factory for details.

7.0 MAINTENANCE AND REPAIR

Field repair of the Model 393B12 is not recommended and would invalidate the warranty. Damaged or defective units should be returned to the factory for inspection and repair quotation. Include a note or tag with the defective unit describing the nature of the problem.

STANDARD CABLES

Series 002 ~ GENERAL PURPOSE WHITE COAXIAL: General purpose coaxial cable with an extruded waterproof Teflon insulation jacket: 29 pF/ft nominal cable capacitance, 400 °F (204 °C) maximum temperature, 0.071 inch (1,8 mm) cable diameter. Suitable for most ICP® sensor applications.

Series 003 ~ LOW NOISE BLUE COAXIAL: High temperature, low noise cable with Teflon wrapped insulation. Internal lubricant reduces noise induced by cable motion: 29 pF/ft nominal cable capacitance, 550 °F (288 °C) maximum temperature, 0.079 inch (2,0 mm) diameter. For use with charge or ICP® sensors.

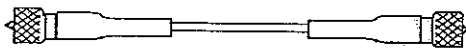
Series 010 ~ TRIAXIAL (4-CONDUCTOR): Twisted, shielded four-conductor cable with clear Teflon insulation jacket: 31 pF/ft nominal cable capacitance, 400 °F (204 °C) maximum temperature, 0.1 inch (2,54 mm) cable diameter. For use with ICP® triaxial sensors.

Series 012 ~ STANDARD BLACK COAXIAL: Low cost, black coaxial cable (RG-58/U) similar to standard household television cable: 29 pF/ft nominal cable capacitance, 140 °F (60 °C) maximum temperature, 0.195 inch (4,95 mm) cable diameter. Ideal for transmitting low impedance signals over long cables.

Series 024 ~ INDUSTRIAL TWISTED SHIELDED: Twisted, shielded pair with polyurethane insulation jacket: 42 pF/ft nominal cable capacitance, 250 °F (121 °C) maximum temperature, 0.25 inch (6,35 mm) cable diameter. For use with ICP® sensors in high EMI and RFI environments; 90% braided shield.

Model Number Format: Cable type/Terminating connectors/Designated length
(For example: Model 002A10 is a 10 ft. 002 type cable terminating as 10-32 coaxial connectors.)

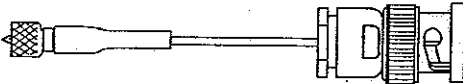
10-32 Coaxial Plug to 10-32 Coaxial Plug



Length:
3 ft (0,9 m)
10 ft (3,0 m)
25 ft (7,6 m)
50 ft (15,2 m)

Available Models:
002A03, 003A03
002A10, 003A10
002A25, 003A25
002A50, 003A50

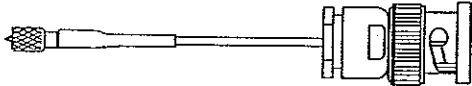
10-32 Coaxial Plug to BNC Plug



Length
3 ft (0,9 m)
10 ft (3,0 m)
25 ft (7,6 m)
50 ft (15,2 m)

Available Models:
002C03, 003C03
002C10, 003C10
002C25, 003C25
002C50, 003C50

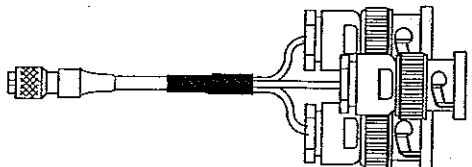
5-44 Coaxial Plug to BNC Plug



Length
10 ft (3,0 m)
25 ft (7,6 m)

Available Models:
002P10, 003P10
002P25, 003P25

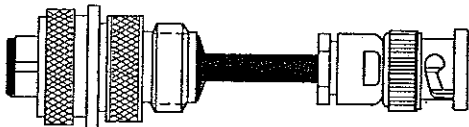
Microtech (4-pin) to three BNC Plugs



Length
5 ft (1,5 m)
10 ft (3,0 m)
15 ft (4,6 m)
20 ft (6,1 m)

Available Models:
010G05
010G10
010G15
010G20

MS3106 (Military 2-pin) to BNC Plug



Length
10 ft (3,0 m)
20 ft (6,1 m)
50 ft (15,2 m)
100 ft (30,5 m)

Available Models:
012R10, 024R10
012R20, 024R20
012R50, 024R50
012R100, 024R100

BNC Plug to BNC Plug



Length
3 ft (0,9 m)
10 ft (3,0 m)
20 ft (6,1 m)

Available Models:
002T03, 003D03, 012A03
002T10, 003D10, 012A10
002T20, 003D20, 012A20

Other lengths and cable types are available . . . consult PCB.

MOUNTING ACCESSORIES

Adhesive Bases: Used for mounting accelerometers to the test object & protecting sensor from adhesive, allowing easy sensor removal. Hard-coating provides electrical isolation between test object & accelerometer.

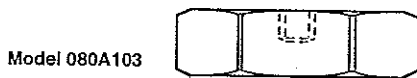


080A14	0.31" hex x 0.32" thick, accepts 10-32 threaded stud
M080A14	0.31" hex x 8,1 mm thick, accepts M5 x 0,8 threaded stud
080A15	0.31" hex x 0.125" thick, accepts 5-40 threaded stud
M080A15	0.31" hex x 3,18 mm thick, accepts M3 x 0,50 threaded stud
080A	0.50" hex x 0.187" thick, accepts 10-32 threaded stud
M080A	0.50" hex x 4,75 mm thick, accepts M6 x 0,75 threaded stud
080A12	0.75" hex x 0.200" thick, accepts 10-32 threaded stud
M080A12	0.75" hex x 5,08 mm thick, accepts M6 x 0,75 threaded stud
080A13	0.75" hex x 0.200" thick, accepts 1/4-28 threaded stud
080A19	0.75" hex x 0.375" thk, accepts 10-32 threaded stud each side to electrical isolation with a stud mount

Adhesives: Used for mounting sensors on various surfaces.

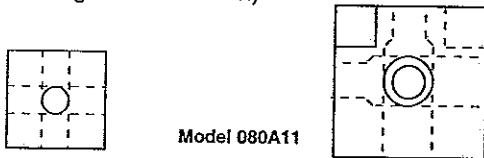
080A24	Petro Wax, includes four sample squares for temporary mount
080A90	'Quick bonding gel' provides semi-permanent bond (max 180°F)

Magnetic Bases: Used for portable mounting on ferrous materials.



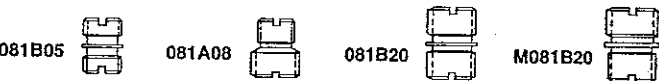
080A27	0.75" hex, high strength magnet, integral 10-32 threaded stud
080A30	high strength miniature magnet, accepts 5-40 threaded stud
M080A30	high strength miniature magnet, accepts M3 x 0.5 threaded stud
080A54	1.50" hex, high strength magnet, integral 1/4-28 threaded stud
080A103	1.50" hex, high strength magnet, accepts 1/4-28 threaded stud
080M162	0.75" hex, high strength magnet, accepts 10-32 threaded stud
080M165	0.75" hex, high strength magnet; accepts M6 x 0,75 threaded stud

Triaxial Adaptors: Adapts three standard accelerometers for monitoring vibration in 3 orthogonal axes. (Hex size listed represents the maximum allowable hex size for mating accelerometers.)



80B10	0.875" cube, accepts 10-32 threaded stud, 0.625" hex
M080B10	22,2 mm cube, accepts M6 x 0,75 threaded stud, 0.625" hex
80B11	1.25" cube, supplied with 10-32 threaded cap studs, 0.875" hex
80B16	0.37" cube, accepts 5-40 threaded stud, 0.312" hex
M080B16	9,5 mm cube, accepts M3 x 0,75 threaded stud, 0.312" hex
80A62	1.25" cube, supplied with 1/4-28 threaded cap studs, 0.875" hex

Studs: Used for securing accelerometers to test objects. To ensure accurate readings, mount the accelerometer with recommended mounting torque.



31A27	5-40 to 5-40	081A08	10-32 to 1/4-28
31B05	10-32 to 10-32	081M24	10-32 to 5-40
081B05	10-32 to M6 x 0,75	081B20	1/4-28 to 1/4-28
081B23	10-32 to M5 x 0,8	M081B20	1/4-28 to M6 x 0,75
31A21	10-32 to 10-32 electrical isolation mounting pad/stud		

Older Connector Adaptors save time & money, allowing on-site cable pair. Supplied cap provides cable strain relief for right angle connections.



SIGNAL CONDITIONERS

Signal conditioners are required for powering ICP® sensors with built-in electronics unless the capability already exists in your readout instrumentation. Most offer:

- system integrity meters or LED's
- constant current power to accelerometer
- decoupling to remove DC bias from sensor

Battery	480C02	Unity gain
Powered:	480E09	Selectable gain of x1, x10 or x 100

Line	482A06	Single channel, unity gain
Powered:	484B06	Single channel, provides DC coupling
	482A16	Four channel, 'push-button' gain of x1, x10, x100 (with overload and fault lights)
	482A20	Eight channel version of Model 482A16
	583A/584A	16 channel, 19" rack mountable

For 210-250 VAC, add 'F' prefix to model number (i.e., F482A20)

HANDHELD EXCITER

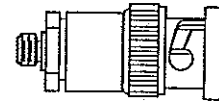
Model 394B06 Handheld Calibrator, 1.0 g rms

- provides end-to-end system checkout
- rugged suspension design prolongs life
- calibrates accelerometers up to 85 gm weight

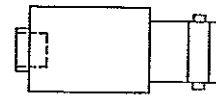
Provides fixed 1 g vibration level to verify the sensitivity of accelerometers up to 85 grams.

CONNECTOR ADAPTORS

070A02, SCOPE INPUT ADAPTOR: 10-32 coaxial jack to BNC plug. For adapting BNC connectors for use with 10-32 coaxial plugs.

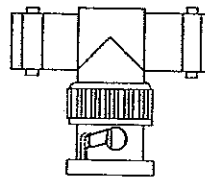
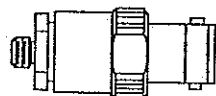


070A03, CONNECTOR ADAPTOR: 10-32 coaxial plug to BNC jack. Converts 10-32 connectors for use with BNC plugs.



070A05, 10-32 COAXIAL FEED-THRU CONNECTOR: 10-32 coaxial jack to 10-32 coaxial jack. Joins two cables terminating in 10-32 coaxial plugs.

070A08, CABLE ADAPTOR: 10-32 coaxial jack to BNC jack; joins cables terminating in BNC plug & a 10-32 coaxial plug.



< 070A11, BNC 'T' CONNECTOR: BNC plug to two BNC jacks. Used as a cable splitter.

070A12, BNC COUPLER: BNC jack to BNC jack. Joins two cables terminating in BNC plugs.

070A14, 10-32 HERMETIC FEED-THRU: 10-32 coaxial jack to 10-32 coaxial jack. Tapped 5/16-32. Max. wall thickness of 1/4 inch.

070A20, 10-32 COAXIAL RIGHT ANGLE CONNECTOR ADAPTOR: 10-32 coaxial jack to 10-32 coaxial plug; for confined locations.

076B31, 10-32 COAXIAL CONNECTOR KIT: Includes two tools and twenty 10-32 'spring-loaded' coaxial connectors. Wire stripper and soldering iron are not supplied.