

# OPERATION MANUAL MODEL 4020 & 4030 ACCELEROMETER

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### WARRANTY

Measurement Specialties, Inc. accelerometers are warranted during a period of one year from date of shipment to original purchaser to be free from defects in material and workmanship. The liability of Seller under this warranty is limited to replacing or repairing any instrument or component thereof which is returned by Buyer, at his expense, during such period and which has not been subjected to misuse, neglect, improper installation, repair, alteration, or accident. Seller shall have the right to final determination as to the existence and cause of a defect. In no event shall Seller be liable for collateral or consequential damages. This warrant is in lieu of any other warranty, expressed, implied, or statutory; and no agreement extending or modifying it will be binding upon Seller unless in writing and signed by a duly authorized officer.

### RECEIVING INSPECTION

Every Measurement Specialties, Inc. accelerometer is carefully inspected and is in perfect working condition at the time of shipment. Each accelerometer should be checked as soon as it is received. If the unit is damaged in any way, or fails to operate, a claim should immediately be filed with the transportation company.

### SERVICE CONCERNS

If a Measurement Specialties, Inc. instrument requires service, first contact the nearest Measurement Specialties, Inc. representative. They may be able to solve the problem without returning the unit to the factory. If it is determined that factory service is required, call Customer Service at the regional headquarters for an RMA number before return.

### RETURNS

All units being returned to the factory require an RMA (Return Material Authorization) number before they will be accepted. This number may be obtained by calling Customer Service at the regional headquarters with the following information; model number(s), quantity, serial number(s), and symptoms of the problem, if being returned for service. You must include the original purchase order number if under warranty.

### RECALIBRATION SERVICES

The Vibration Sensors Design Center and its two manufacturing facilities in China and France offer factory re-calibration services for Piezoresistive, Piezoelectric and Integrated Electronics Piezoelectric (IEPE, ISOTRON, ICP, etc.) accelerometers. NIST (US), DKD (Germany), COFRAC (France) traceable calibration services on sensitivity at 100 Hz (102 or 120 Hz in Europe) and full frequency sweeps are offered. Contact the regional headquarters for pricing information.

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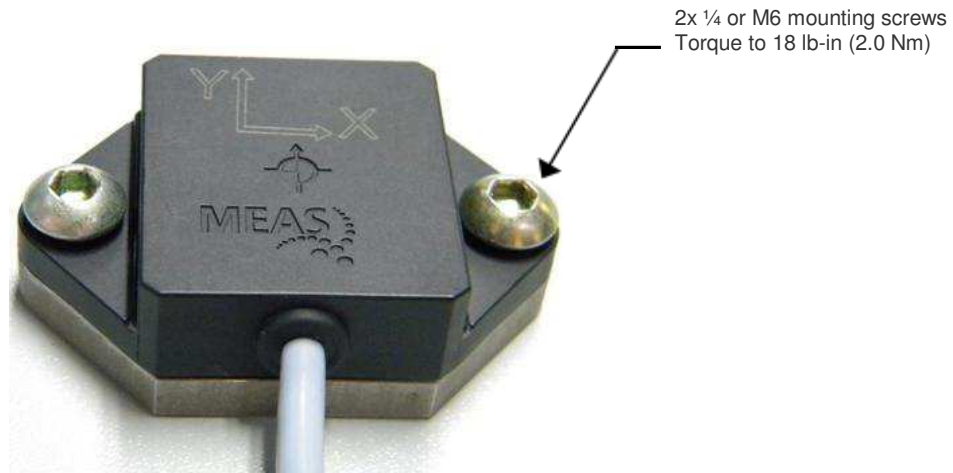
### DESCRIPTION

The Model 4020 & 4030 are low noise, signal conditioned DC accelerometers packaged in a durable molded housing with an integral cable assembly. The accelerometers are offered in  $\pm 2g$  &  $\pm 6g$  ranges with a nominal 0-200Hz bandwidth and an operating temperature range of -40°C to +85°C. The model 4020 is a dual axis configuration while model 4030 is a triaxial configuration.

### INSTALLATION

The model 4020 & 4030 accelerometers are designed to be screw mounted. The following guidelines should be followed when screw mounting these accelerometers.

- The mounting surface should be clean and free of any residue or foreign material.
- The mounting surface should be smooth and flat.
- Torque screws to recommended limits using steel washers under the heads of the mounting screws. Use manual torque wrench (do not use electric tools).



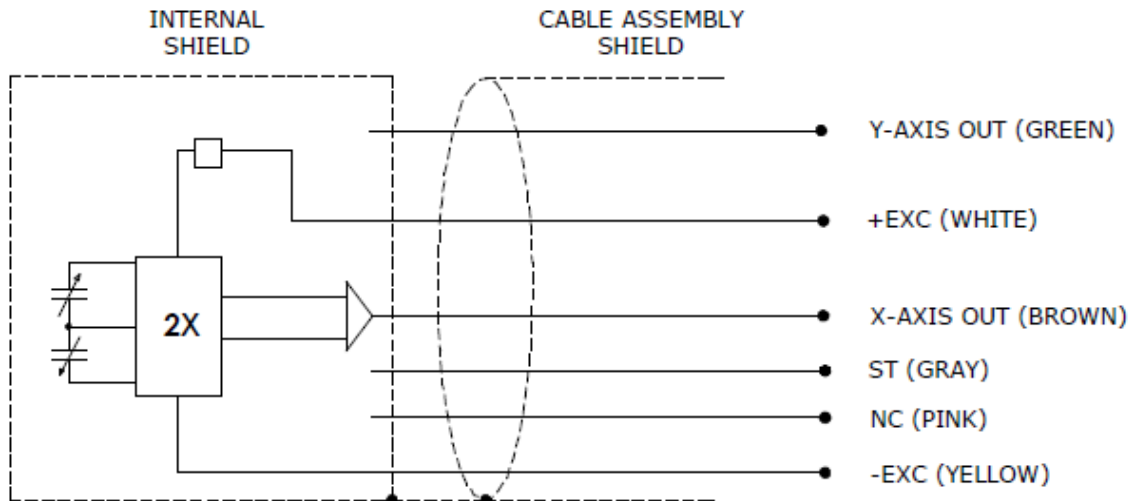
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### WIRING

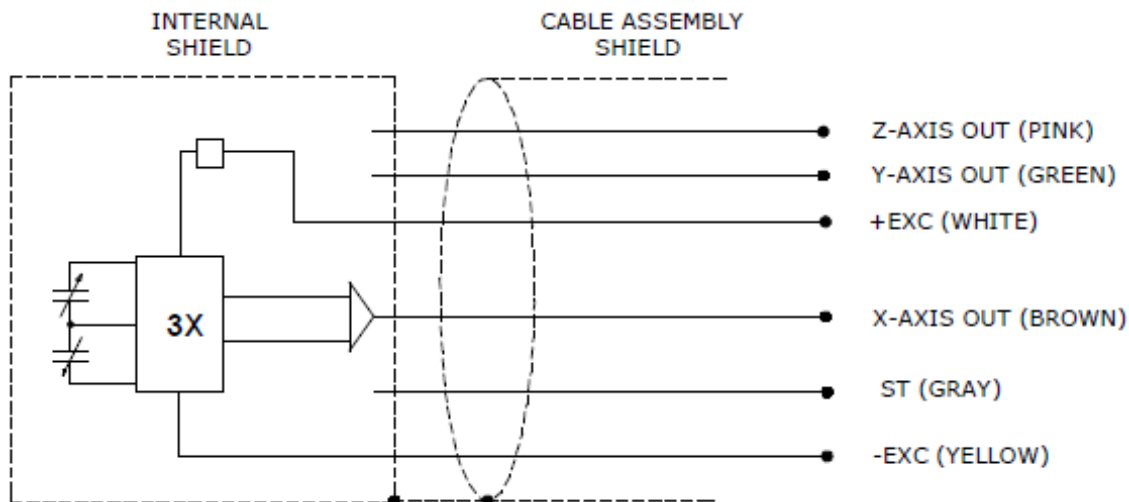
The accelerometers are designed to be operated from 5-30Vdc excitation and provide a 0.5 to 4.5V full scale output. The output is DC-coupled and should be used in single-ended mode. The sensor and electronics are fully contained in an internal Faraday cage which is connected to the cable shield (floating with respect to circuit ground) for RFI protection.

A 2.5Vdc bias will be present on the output leads and the output of the accelerometer will be 0.5-4.5V full scale. The accelerometer should be connected to the interface circuitry as detailed below.

Biaxial model 4020 wiring diagram



Triaxial model 4030 wiring diagram



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### CABLE ROUTING

The model 4020 & 4030 accelerometers incorporate a PVC jacketed cable with an integral shield. The cable assembly should be properly secured at regular intervals during testing. It is recommended to use clamps, wax, or tape to secure the cable to minimize cable motion that can add noise to the output signal. The initial attachment should be within two to three inches of the accelerometer.

Avoid routing cables near high-voltage wires and also ground the shield at the signal conditioner to minimize ground loops.

### SELF-TEST OPERATION

The model 4020 & 4030 accelerometers incorporate a self-test feature. This feature is activated by grounding the self-test lead (gray). The corresponding shift in bias output is shown in table below.

Range (g)	±2	±6
Self Test Output Change (mV)	X = +210 ±90	X = +70 ±30
	Y = -210 ±90	Y = -70 ±30
	Z = -340 ±190	Z = -110 ±65

The self-test bias shift takes place no matter the orientation of the accelerometer. Sensitivity is unaffected. For normal operation the gray lead floats and is not connected.

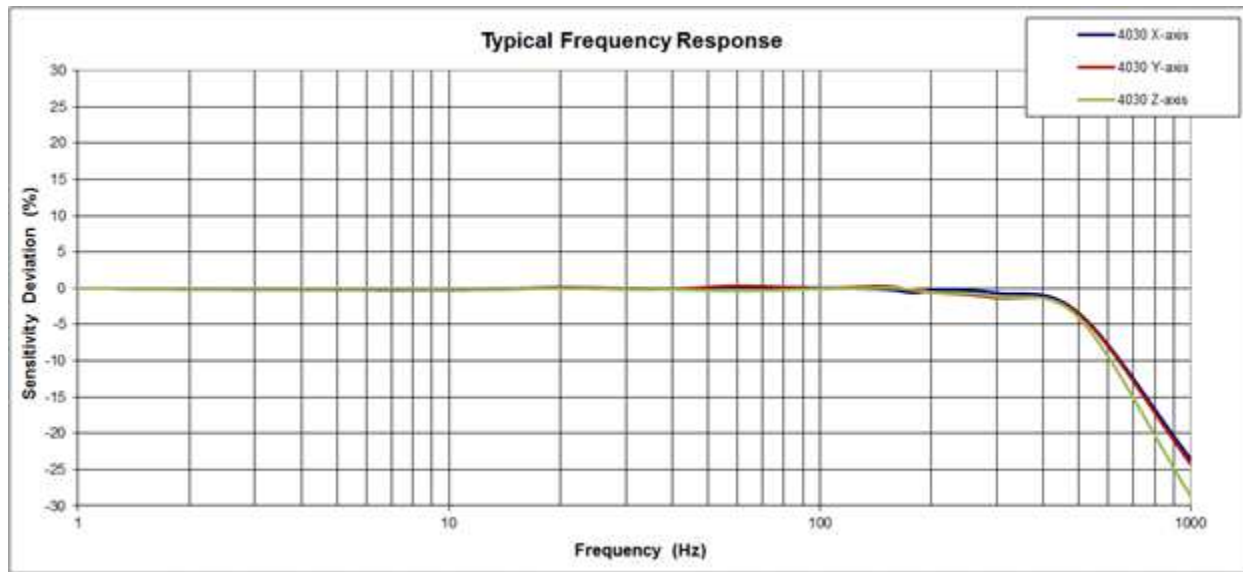
### NOISE FLOOR SPECIFICATIONS

The model 4020 & 4030 accelerometers incorporate a LP filtered output for a high output signal. The noise specifications for this accelerometer are detailed in table below.

FULL SCALE RATING (g-pk)	SENSITIVITY (mV/g)	±5% AMPL PASSBAND (Hz)	PASSBAND NOISE (µVrms)	SPECTRAL NOISE (µg-rms/√Hz)	DYNAMIC RANGE (dB)
2	1000	200	600	51	67
6	333	200	240	42	75

## FREQUENCY RESPONSE CURVES

The typical frequency response curves for the model 4030 accelerometers are illustrated below.



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