3-AXIS HIGH-SENSITIVITY ACCELEROMETER



This high-performance 3-axis MEMS accelerometer is engineered for unparalleled precision in measuring both static (DC) and dynamic acceleration across a range of demanding applications. Its robust design ensures reliable operation in harsh environments, making it ideal for critical industrial, aerospace, and research-oriented tasks requiring extremely accurate acceleration data.

Key Features:

- Ultra-High Precision: Delivers exceptional accuracy for sensitive acceleration measurements.
- Multi-Axis Measurement: Simultaneous 3-axis acceleration sensing for comprehensive data.
- Robust & Durable Construction: Withstands severe shock and harsh operating conditions.
- Flexible Output Configurations: Supports standard voltage and current loop interfaces for broad compatibility.
- Extended Temperature Range: Maintains specified performance across a wide thermal spectrum.
- DC Response: Capable of measuring static gravitational forces and very low-frequency movements.

Detailed Specifications:

1. **Performance Characteristics**:

- Number of Axes: 3 (X, Y, Z)
- Measurement Range (Selectable per Axis):
    - ±1g

  Accuracy (Full Scale Output - FSO): 0.02% to 0.05% FSO (typical)

    - Includes: Non-linearity, Hysteresis, and Repeatability over the full measurement range.
- Resolution: 1µg
- Bandwidth (Frequency Response - -3dB point):
    - Configurable/Model Dependent, typical options:
        - 0Hz to 2Hz
        - 0Hz to 30Hz
    - Note: DC response indicates suitability for static acceleration and tilt sensing.
- Bias Stability: (Highly critical for force-balanced accelerometers; e.g., ±50µg over time/temperature) - Suggestion for inclusion.
- Noise Density: (e.g., 10µg/Hz at 10Hz) - Suggestion for inclusion, crucial for high-sensitivity devices.
- Cross-Axis Sensitivity: ≤1% (typical) - Crucial for 3-axis devices.
- Output Type: Force-Balanced (Servo) Accelerometer

2**. Electrical Characteristics**:

- Output Signal Options:
    - Analog Voltage Output: ±5V (Bipolar) or 0−5V (Unipolar)
    - Analog Current Output: 4−20mA (Loop Powered)
- Supply Voltage (Vs):
    - For ±5V output: ±12V to ±18V (regulated DC)
    - For 0−5V output: +12V to +30V (regulated DC)
    - For 4−20mA output: +9V to +30V (regulated DC)
- Current Consumption: (Specify Max. for each output type, e.g., 20mA (typical, excluding load current)) - Essential for power budgeting.
- Output Impedance: (For voltage output, e.g., <100Ω) - Suggestion for inclusion.

3. **Environmental & Mechanical**:

- Shock Limit (Non-Destructive/Survival): 1500g (for 0.5ms, half-sine pulse) - Add pulse duration/shape for clarity.
- Operating Temperature Range: −40∘C to +80∘C
- Storage Temperature Range: −55∘C to +100∘C - Important for logistics.

- Environmental Protection (IP Rating): (Specify, e.g., IP67 - Dust-tight, Protected against temporary immersion up to 1m for 30 minutes; IP68 for continuous submersion options available).
- Enclosure Material: High-grade Stainless Steel or Anodized Aluminium (Specify exact material, e.g., 316L Stainless Steel)
- Mounting: (Detailed mechanical drawings with dimensions, bolt patterns, and mounting torque specifications would be provided in the full datasheet. Common options: Flange mount, Stud mount).
- Dimensions: (Specify typical LxWxH or diameter/length) - Crucial for integration.
- Weight: (Specify typical weight in grams/kilograms) - Important for mobile/weight-sensitive applications.

4. **Additional Features & Compliance**:

- Integrated Temperature Sensor: Provides an auxiliary output for ambient temperature, useful for compensation or system monitoring.
- Output Connection Options:
    - Pin Header (for PCB integration)
    - Industrial Connector (e.g., MIL-DTL-5015 series, M12, or custom sealed connector)
    - Integrated Armoured Cable (Specify length and material if applicable)
- Electromagnetic Compatibility (EMC): (Compliance with CE, FCC Part 15, etc.) - Suggestion for inclusion.
- Compliance: RoHS Compliant
- Calibration: Factory calibrated with NIST-traceable certificates available.

Ordering Information:

- Part Number : TSQ-MEACC-ABB-MIL-IND.
- Description : **3-AXIS HIGH-SENSITIVITY ACCELEROMETER.**