



New Sensing products of Meggitt Group

Moscow - October the 23rd

MEGGITT



Today's agenda

- Who's Meggitt Sensing System
- The Measurement division
- Sensor production
- 2013 released and new incoming products
- Application examples



Meggitt Sensing Systems

- ▶ Is a company committed to manufacture and commercialize reliable sensors for Aeronautical, Energy, Industrial and Testing markets.

Some of the well know brands:

- Endevco
- Vibrometer
- Sensorex
- Wilcoxon Research
- Ferroperm

Meggitt Sensing Systems

Aerospace

- Engine sensing
- Fluid sensing
- Inertial systems
- Ignition systems
- Engine monitoring
- Landing gear monitoring



Energy

- Vibration sensing
- Fire and flame detection
- Ignition systems
- Combustion monitoring
- Blade health monitoring
- Condition monitoring systems



Measurement

- Acceleration, pressure, shock and vibration sensing
- Automotive crash test
- Cardiac rhythm monitoring
- Laboratory and airborne test instrumentation
- Calibration systems





Measurement division & Sensor Production

MSS is market leader for great performance test sensors in and high end applications

➤ **Acceleration, pressure and shock sensing**

- First to innovate MEMS based monolithic piezoresistive (PR) accelerometer
- Industry's first high temperature Isotron® (IEPE) triaxial accelerometer, up to 175°C

➤ **Technology includes:**

- MEMS devices (piezoresistive and variable capacitance accelerometers)
- PE / IEPE (Isotron®)
- LVDT sensors
- Conditioning electronic and calibration systems
- Cables

Sensor production

▶ Piezo Electric



▶ IEPE - Isotron®



▶ Piezo Resistive



▶ Variable Capacitance





2013 released and new incoming products

New products launched in 2013:

- Model 123 (launched Mar 2013)
- Model 2280 (launched Apr 2013)
- Model 65HTLPF (launched Apr 2013)
- Model 7253D (launched Aug 2013)
- Model 7298 (launched Aug 2013)
- Model 727 (launched Aug 2013)
- Model 7284 (launched Apr 2013) - ITAR
- Model 7280A (launched Jan 2013) - ITAR
- Model 7280AM4 (launched Jan 2013) - ITAR

To be launched within the end of the year:

- Model 41A, 42A, 43A, 44A, 45A
- Model 46AXX – the POD
- LED terminal
- Model 500B & 500H*
- Model 2130 *
- Model 4830B

Model 123

Benchtop, three channel PE/IEPE signal conditioner

» Key performance parameters

- Three-channel PE/IEPE signal conditioner
- Gain Settings/Calculations up to 999.9
- Gain selections stored in non-volatile memory
- Filtering options
- 1.5Hz to 230 kHz bandwidth (+/-5%)
- Optional HP and LP filters, per channel (plug in modules)
- Constant current source (none, 4mA, 10mA) selectable per channel
- Power Requirements 100/115/230 VAC switch selectable, 50-60 Hz
- CE Compliance



Model 2280

Triaxial +900°F (482°C) PE accelerometer

Key performance features

- +900°F (+482°C) operation
- 3.0 pC/g typical, 2.4 pC/g minimum
- Signal return isolated from case
- Bolt mount (2 x 8-32 screws), three 10-32 side connectors
- 1.35 inch (34.29 mm) square, 0.55 pounds (250 grams)

Target applications

- Engine / turbine testing
- Test cells instrumentation
- Down hole drilling



Model 65HTLPF

Triaxial Isotron accelerometer with low pass filtering

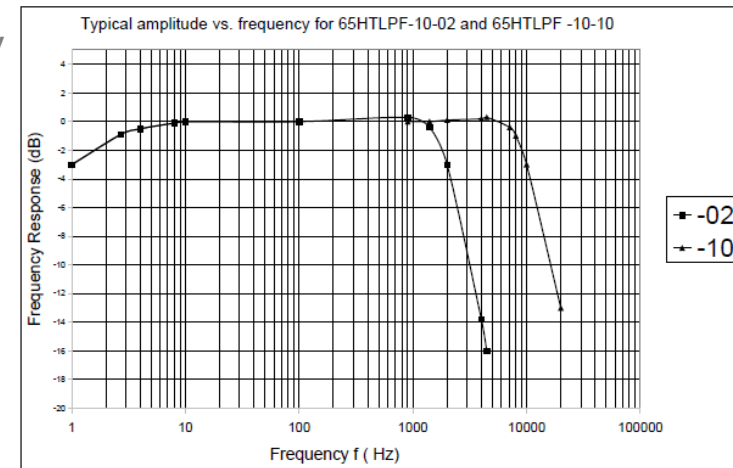
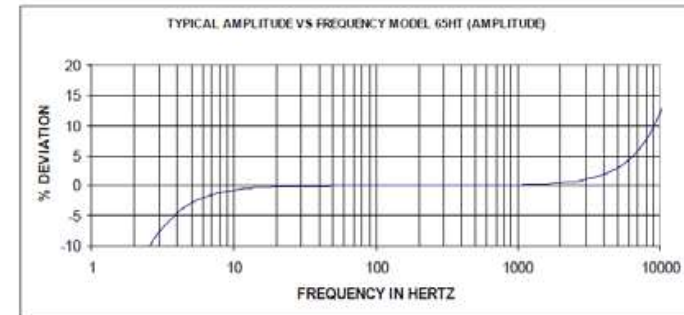


Key product features

- 10 mm cube triaxial Isotron accelerometer
- Integral 2-pole low pass filter 2 kHz and 10kHz corner frequency options available
- 10 mV/g sensitivity
- +175°C operating temperature

Applications

- where high energy input exists with low frequency inputs (high energy input saturates electronics, obscuring low frequency data)
- Flight testing
- Engine and turbine testing (aircraft, automotive, agriculture, power generation, industrial equip.)
- Compressor testing / monitoring
- Rocket testing / monitoring



Model 7253D

Thru-hole bolt mount triaxial Isotron accelerometer

Key performance parameters

- 10 mV/g and 100 mV/g sensitivity options
- Frequency response ($\pm 5\%$) from 10 Hz to 6000 Hz
- Signal ground isolated from mounting surface
- Hermetically sealed titanium case, 4-pin connector
- 10-32 mounting bolt, included
- 0.700 inch square (length/width) by 0.375 inch high, <10 grams

Target applications

- Ground testing – aircraft, missiles, engines and their components
- Flight testing
- Vibration testing/monitoring of industrial machinery
- Vibration testing/monitoring of large vehicles and their engines/motors
- Other applications where orientation of the X-Y-Z sensitive axes and/or connector location is critical



Endevco® Model 7298 new product release

Triaxial variable capacitance accelerometer

- ▶ Fully hermetic accelerometer for worryless exterior installation
 - Compact hermetic stainless steel package with water-resistant connector.
 - Precision digital temperature compensation for accuracy over a broad temperature range.
 - Available in 2g, 5g, 10g, 30g, 50g, 100g ranges.
 - Simple screw mount installation with factory controlled and tested cross axis performance.
 - More cost effective and easier to install than three single axis sensors
- ▶ The experience of Endevco® and the product breadth of Meggitt Sensing Systems
 - Our vertical integration means we control the quality from the MEMS sensor made in our in-house fab to the final test with our certified calibration systems.
 - Our broad product portfolio enables one stop shopping from the most trusted name in the industry.



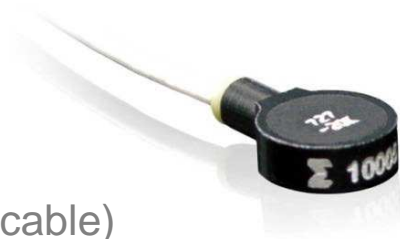


Model 727

High g drop test accelerometer

- ▶ **High g performance in an ultra-miniature package**
 - Available in 2,000, 6,000, 20,000 and 60,000g ranges
 - Exceptional frequency response
 - Adhesive mount with 10 foot integral cable
 - Small (0.28 inch diameter) and lightweight (0.3 grams excluding cable)
 - Supplied with a removal tool; mounting kit is optional

- ▶ **Builds on the experience of Endevco**
 - MEMS sensor manufactured in-house at our ISO 9001 certified fab
 - The highest reliability and the most trusted name in the industry
 - Unique DC response sensor designed for drop testing
 - 727 has been tested with adhesive mounting up to 90,000g





Model 41A, 42A, 43A, 44A, 45A

General purpose Isotron accelerometers

- ▶ Define a full product family of similar performance, wide range of sensitivity options
 - Top connector and side connector single axis accelerometers
 - Cube single axis accelerometer
 - Cube triaxial accelerometers

- ▶ Offer full complement of mounting accessories
 - Included mounting stud is customer specified

- ▶ Includes TEDS IEEE P1451.4 (TEDS v0.9)
 - Address IEEE 1451.4 (TEDS v1.0) in 2014

Model 41A, 42A, 43A, 44A, 45A

General purpose Isotron accelerometers

Target applications

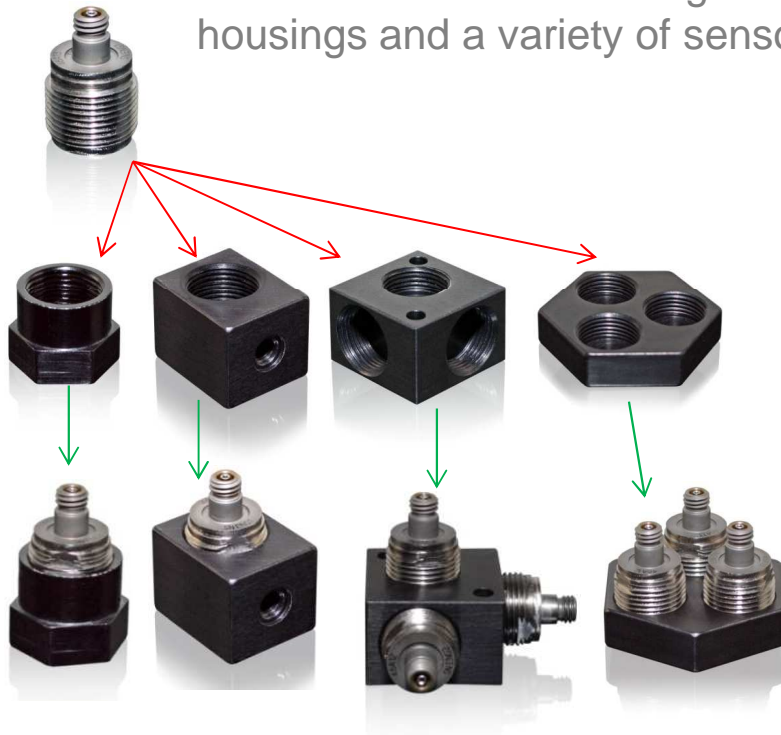
- Any vibration testing/monitoring of articles of any reasonable size
- Automotive
- Aerospace (aircraft, spacecraft)
- Industrial / manufacturing equipment
- Laboratory
- Energy
- Rotating equipment
- Turbines (gas, wind, steam)
- Defense
- Consumer electronics
- Household products



Model 46AXX

The POD

- ▶ A brand new concept: it is not needed to maintain a variety of accelerometers. It's enough to keep a small inventory of housings and a variety of sensor assembly pods.



▶ Key features

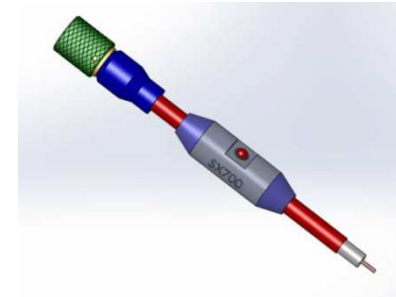
- Versatility in mounting configurations and sensitivities
- Single and triaxial mounting
- Mix and match sensitivities in any configuration
- 10 mV/g
- 25 mV/g
- 100 mV/g
- 500 mV/g
- 1000 mV/g
- Stud or adhesive mount

Model 8930

Inline IEPE LED

Product overview

- A short (2-3 inches, fixed length) add-on cable adaptor.
- To be used as a an inline adaptor for existing cable installations
- Customers would not need to buy new cable assemblies
- Designed to provide a convenient, cost effective means of visual interconnection verification between sensors, cabling, signal conditioning, and DAQ system, especially in in large, multi-channel test configurations.
- Provides visual verification the sensor is in the intended location
- The LED can be turned on & off when the system is in TEDS mode, without impacting the performance of the sensor
- Compatible with TEDS IEPE accelerometers (does not require TEDS accelerometers)





Model

Portable handheld shaker

▀ Features

- 1 g reference source, user selectable at 61.4, 100.0, or 159.2 Hz
- Battery operation for field use
- Tests vibration sensors up to 250 grams
- Selectable RMS or peak vibration
- Low battery indicator, overload indicator
- Reference test point
- Continuous operation or Auto shutoff settings
- Magnetic base mount option

Model 4830B

Handheld Accelerometer Simulator

Basic description

- Battery operated, portable instrument designed to simulate the electrical output signals generated by many commonly available vibration transducers
- The unit provides AC output signals which will mimic those of either voltage mode accelerometers (generic IEPE types, Isotron etc.) or charge mode accelerometers (both single ended and differential configurations)
- Used for calibration/fault finding of complete measurement chains
- Frequency range from 1 Hz to 20 kHz
- Create and store up to 40 profiles
- Basic FFT function fitted



Thank you

