Schaevitz® A215/A220

Gravity Referenced Servo Accelerometer

Sherborne Sensors
Clearly the first choice for precision .....

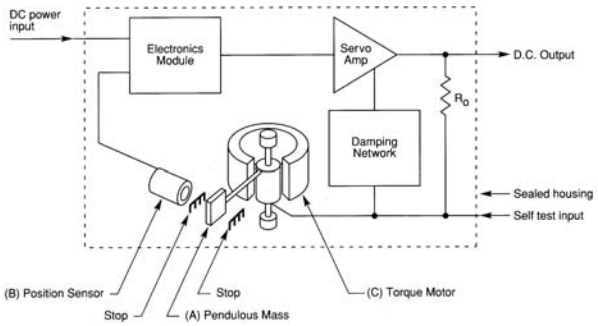
Features

- *Ranges ±1g to ±20g*
- *Closed loop force balance system*
- *Self test facility*
- *DC input - DC output*
- *High reliability*
- *Manufactured to ISO 9001 standards*
- *Flight qualified versions available*



Introduction

The Sherborne Sensors' range of Servo Accelerometers measure vector acceleration with high accuracy using a closed loop force balance torquer mechanism.
Typical applications include data acquisition systems, crash recorders, fatigue life monitoring and prediction; for stabilising platforms on space and ship borne satellite tracking systems; monitoring and controlling deceleration in mass transit systems; road bed analysis and fault detection equipment for high speed railways; military and civil flight simulators; autopilots and low frequency vibration monitoring.
In addition to the instruments offered in this bulletin Sherborne Sensors design accelerometers for specific applications. These custom designed units can be manufactured and tested to conform to military standards.
All A200 Series Accelerometers operate as a closed-loop torque balance servo system. With reference to the illustration below the pendulous mass 'A' develops a torque proportional to the product of its mass unbalance and the applied acceleration.
The movement of mass 'A' is detected by position sensor 'B' whose output signal is connected to an amplifier. The resulting current is fed into the torquer motor 'C' which then develops a torque exactly equal to, but directly opposed to the initial torque from the pendulous mass 'A'. Mass 'A' stops moving, assuming a position minutely differing from it's zero 'g' position. Simultaneously, the current to the torquer motor is fed through a stable resistor to provide an output voltage proportional to the applied acceleration.
The system is damped by means of a phase advancing network within the integrated thick film module. The A200 series servo operation can be checked (self test) after installation by applying an independent current input to the torquer motor.
By adjusting the parameters of the servo amplifier and related electronic networks, the operating characteristics of a servo accelerometer can be changed or modified to suit a particular application.



MECO MEASUREMENTS & CONTROLS
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Designed for operation from a 15-0-15 DC power supply the A200 series is available in 2 versions. The A215 has a volume of approximately one cubic inch and is intended for use where space is limited. Electrical termination is via solder pins.
The A220's larger size allows for solder pin or connector termination and optional features including bias, or low impedance outputs.

General Specification

Input

Ranges (±g)	1.0; 2.0; 5.0; 10.0; 20.0
Input Voltage	15-0-15V (±10%) dc
Input Current	±15mA max.

Output at 25°C

Full Range Output	±5V dc ±1%
Zero Offset	≤ ±0.1% FRO
Nonlinearity (LMS)	≤ ±0.05% FRO (ranges to ±10g) ≤ 0.10% FRO (ranges above ±10g)
Hysteresis	≤ 0.02% FRO
Resolution	≤ 0.0005% FRO
Cross Axis Sensitivity	≤ ±0.2% FRO (ranges to ±10g) ≤ ±0.5% FRO (ranges over ±10g)
Noise Output	5mV (RMS) max.
Damping Ratio	0.6 (±0.1)

Range (g)	Natural Frequency (nom.-Hz)	Output Impedance (kilohms)
±1.0	90	5
±2.0	100	2.5
±5.0	115	5
±10.0	130	2.5
±20.0	150	5

Environmental

Temp. Operating	-55°C to +95°C
Storage	-65°C to +105°C
Thermal Sensitivity Shift	≤ ±0.02% FRO/°C
Thermal Zero Shift	≤ ±0.002% FRO/°C
Altitude	-45 to +30,450 metres without damage
Shock	100g for 11ms (½ sine wave)
Acceleration	Will withstand constant 100g in all 3 axes without damage
Humidity/Immersion	IP65
Insulation Resistance	≥ 20 MΩ at 50V dc

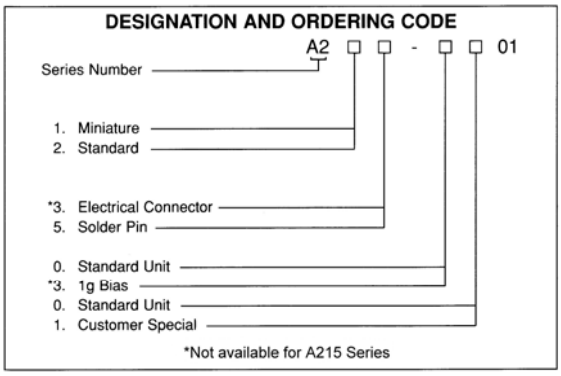
Physical

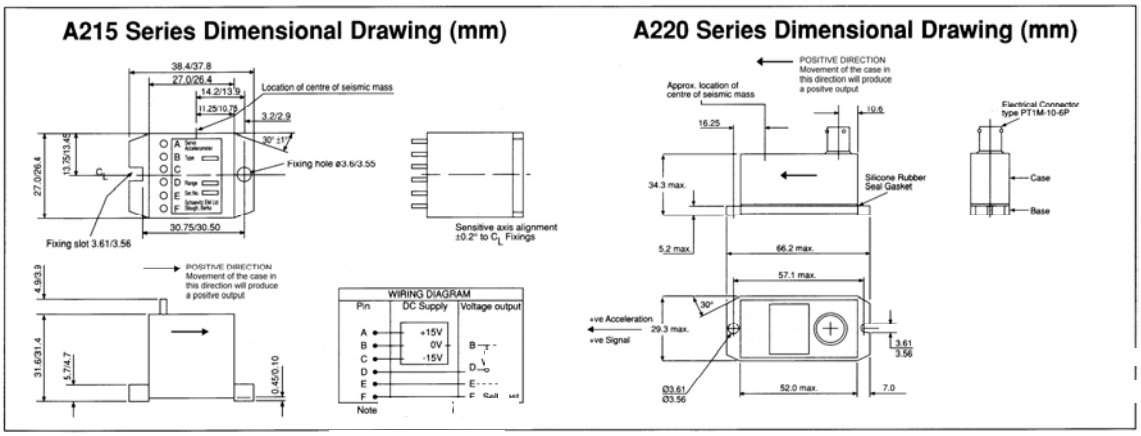
Sensitive Axis Alignment	Parallel to fixing holes within ±0.2°
Weight	57 grams - A215 115 grams - A220

Electrical Connections

Pin Connection	Pin A - +15V dc excitation Pin B - 0V dc excitation/output Pin C - −15V dc excitation Pin D - ±5V dc output Pin E - Not Connected Pin F - Self Test

Please specify Mating Connector 3CON-0009 if required.





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