

# A640 Series

DC-Operated Accelerometer with  
unfiltered and low pass filter outputs

  
Sherborne **Sensors**  
... the first choice in precision

## Features

- Ranges  $\pm 1g$  to  $\pm 20g$
- Essentially zero temperature coefficient of damping ratio
- Filtered and unfiltered outputs simultaneously available
- Integral temperature compensation
- DC input - DC output
- Signal ground isolated from power ground
- High reliability



## Introduction

The Sherborne Sensors' range of Solid State Accelerometers measure vector acceleration with high accuracy using an advanced micromachined (MEMS) silicon sensor incorporating a gas damping feature. Unlike fluid damped devices the gas damping employed is essentially independent of temperature. The transducer also incorporates positive mechanical stops conferring excellent shock resistance. The accelerometer is also compensated for the effects of temperature on both sensitivity and zero.

Designed for operation from an unregulated DC power supply the A640 series has a military style, bayonet lock electrical connector. The accelerometer has a high useable frequency response and is fitted with a 5Hz low pass filter as standard. The accelerometer may be supplied with the output biased at 1g to offset the acceleration due to gravity.

Typical applications include data acquisition systems, crash recorders, fatigue life monitoring and prediction; 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.

The A640 series will in many cases replace the long discontinued Schaevitz® Series A400 accelerometers and is mechanically inter-changeable.

In addition to the product described in this bulletin, Sherborne Sensors design and develop accelerometers for specific applications. These custom designed units are manufactured and tested to conform to the highest specific requirements and standards.



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Sherborne Sensors, a Nova Metrix company



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DC-Operated Accelerometer with unfiltered and low pass filter outputs

## General Specification

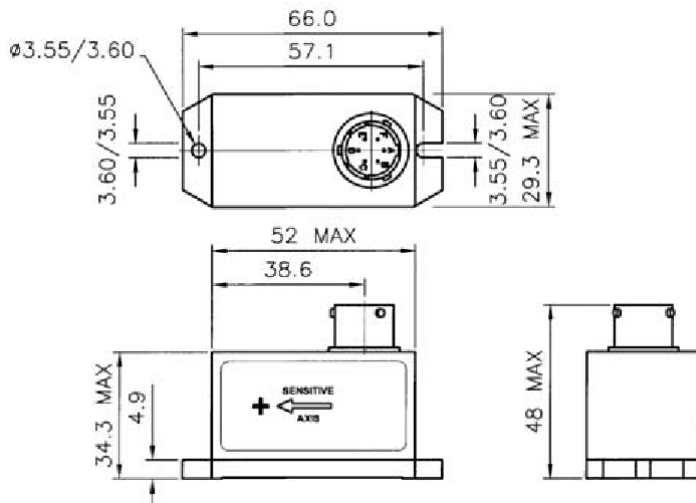
### Input

Ranges  $\pm 1, 2, 3, 5, 10, 20g$   
 Input Voltage ..... +6 to 32Vdc Unregulated  
 Input Current ..... 100mA dc max.

### Output at 25°C

Full Range Output .....  $\pm 5V$  DC  $\pm 2\%$   
 Zero Offset .....  $\leq \pm 2\%$  FRO  
 Non-linearity .....  $\leq \pm 0.5\%$  FRO  
 Hysteresis .....  $\leq 0.02\%$  FRO  
 Resolution .....  $\leq 0.001\%$  FRO  
 Cross Axis Sensitivity .....  $\leq \pm 1\%$  FRO  
 Noise Output ..... 5mV rms (DC to 10kHz) max  
 Damping Ratio ..... 0.7 ( $\pm 0.2$ ) @ 25°C  
 Output Impedance .....  $< 1\Omega$   
 Filtered output response ... -3dB at 5Hz, 2-pole

Range	Resonant Frequency	Unfiltered Frequency Response	Thermal Zero Shift	Thermal Span Shift
(g)	(Hz)	(Hz)	(%FRO/°C)	(%Reading/°C)
$\pm 1$	700	0 to 250	$\leq \pm 0.12$	$\leq \pm 0.06$
$\pm 2$	700	0 to 250	$\leq \pm 0.06$	$\leq \pm 0.06$
$\pm 3$	800	0 to 300	$\leq \pm 0.10$	$\leq \pm 0.06$
$\pm 5$	800	0 to 300	$\leq \pm 0.06$	$\leq \pm 0.06$
$\pm 10$	1000	0 to 400	$\leq \pm 0.06$	$\leq \pm 0.06$
$\pm 20$	1500	0 to 600	$\leq \pm 0.06$	$\leq \pm 0.06$



## Environmental

Temp. Operating .....  $-40^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$   
 Temp. Compensated ....  $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$   
 Temp. Storage .....  $-55^{\circ}\text{C}$  to  $+130^{\circ}\text{C}$

Shock ..... 200g for 2ms ( $\frac{1}{2}$  sine wave)

Acceleration ..... Will withstand constant 20 times rated range in all 3 axes without damage

Humidity/Immersion ..... IP65

EMC Directive ..... EN 61326: 1998

### EMC Emissions

EN 55022: 1998, 30 MHz to 1 GHz

### EMC Immunity

EN61000-4-2 1995 inc A1: 1998 & A2: 2001,  $\pm 4$  kV  
 EN61000-4-3: 2002, 10 V/m  
 EN61000-4-4: 2004,  $\pm 1$  kV  
 EN61000-4-4: 2004,  $\pm 2$  kV  
 EN61000-4-6 1996 inc A1: 2001, 3 Vrms  
 EN61000-4-6 1996 inc A1: 2001, 10 Vrms  
 EN61000-4-8: 1994  
 Incorporating Amendment A1:2001, 30 A/m

Insulation Resistance  $\geq 20$  M $\Omega$  at 50V DC

## Physical

Weight ..... 120 grams max

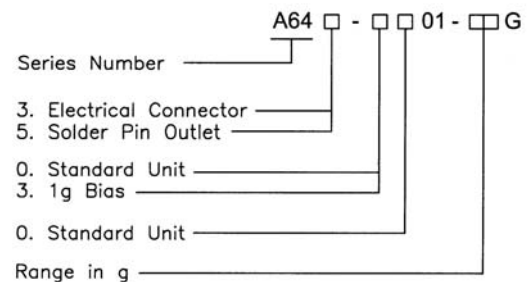
## Electrical Connections

Connector ..... Type Bayonet lock, MIL-C-26482, 6 pin, Shell Size 10

- ..... Pin A – supply +
- ..... Pin B – supply 0v
- ..... Pin C - signal ground
- ..... Pin D - signal output (filtered)
- ..... Pin E - signal output (unfiltered)
- ..... Pin F – not connected

Please specify Mating Connector 3CON-0009 if required

## DESIGNATION AND ORDERING CODE



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