- 3 Axis Acceleration Sensing
- Responds to DC and AC Acceleration
- Low Noise
- Fully Calibrated
- Nitrogen Damped
- Capacitive Micromachined
- +8 to +32V DC Power Excitation
- Rugged Anodized Aluminum Module
- Eight (8) Wire Detachable Cable and Connector
- ±4V Differential Output or 0.5V to 4.5V Single Ended Output
- -55 to +110°C Operation at 32V, -55 to +125°C at 26V or less
- Low Impedance Outputs Will Drive Up To 15 Meters of Cable
- Non Standard g Ranges Available
- Serialized for Traceability

Available G-Ranges

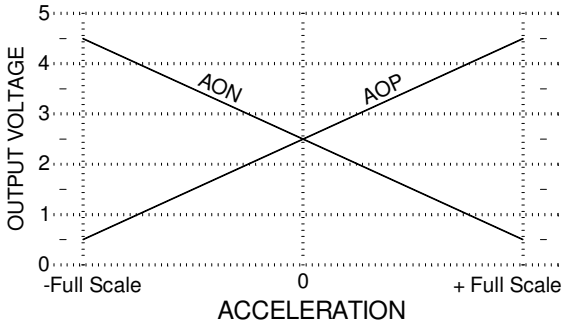
Full Scale Acceleration	Model Number
± 2 g	2476-002
± 5 g	2476-005
± 10 g	2476-010
± 25 g	2476-025
± 50 g	2476-050
±100 g	2476-100
±200 g	2476-200

DESCRIPTION

The Model 2476 triaxial accelerometer is a connectorized version of SDI's best-selling universal high temperature 2470 triaxial module. It combines three orthogonally mounted SDI integrated low noise accelerometers in a rugged case for measuring accelerations in commercial/industrial environments. This module is tailored for zero to medium frequency instrumentation applications. Its anodized aluminum case is epoxy sealed and is easily mounted via two #8 (or M4) screws. On-board voltage regulation and an internal voltage reference eliminate the need for precision power supplies. It is relatively insensitive to temperature changes and gradients. An initial calibration sheet (2476-CAL) is included and periodic calibration checking is also available.

OPERATION

The Model 2476 produces three differential analog output voltage pairs (AON & AOP), which vary with acceleration as shown in the figure (at right). The signal outputs are fully differential about a common mode voltage of approximately 2.5 volts. The output scale factor is independent from the supply voltage of +8 to +32 volts. At zero acceleration the output differential voltage is nominally 0 volts DC; at ±full scale acceleration, the output is ±4 volts DC respectively. The axis directions are marked on the case with positive acceleration defined as acceleration in the direction of the axis arrow.



APPLICATIONS

- Vibration Monitoring and Analysis
- Machine Control
- Modal Analysis
- Robotics
- Crash Testing
- Instrumentation
- Rotating Machinery Control

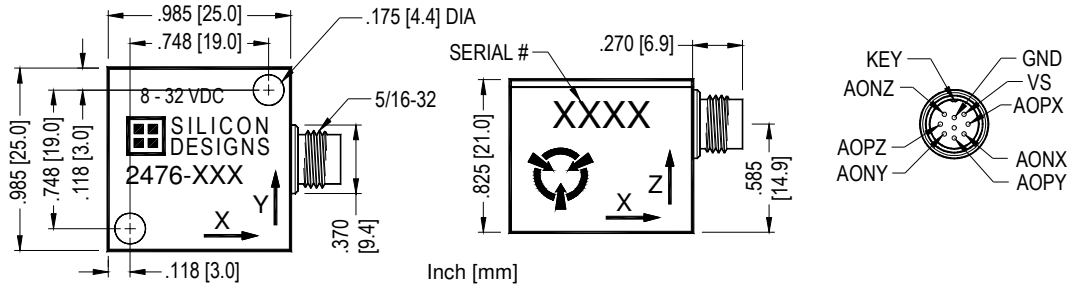
SIGNALS

V_S: (Power) reddish brown wire, GND: (Ground) black wire

AOPX: (Output) green wire	X-Axis positive output
AONX: (Output) white wire	X-Axis negative output
AOPY: (Output) light brown wire	Y-Axis positive output
AONY: (Output) orange wire	Y-Axis negative output
AOPZ: (Output) light blue wire	Z-Axis positive output
AONZ: (Output) yellow wire	Z-Axis negative output

Note: The cable's braided shield is electrically connected to the case. The black ground (GND) wire is isolated from the case.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE



PERFORMANCE

By Model: VS=+8 to +32VDC, TC=25°C.

MODEL NUMBER	Input Range	Frequency Response (Nominal, 3 dB) [1]	Sensitivity, Differential [2]	Output Noise, Differential (RMS, typical)	Max. Mechanical Shock (0.1 ms)
UNITS	g	Hz	mV/g	µg/(root Hz)	g
2476-002	±2	0 - 400	2000	12	2000
2476-005	±5	0 - 600	800	14	
2476-010	±10	0 - 1000	400	15	
2476-025	±25	0 - 1500	160	38	
2476-050	±50	0 - 2000	80	75	
2476-100	±100	0 - 2500	40	150	
2476-200	±200	0 - 3000	20	300	

Note 1: 250Hz ±100Hz, -3dB bandwidth, optionally available. Note 2: Single ended sensitivity is half of values shown.

All Models: Unless otherwise specified, Vs=+8 to +32VDC, TC=25°C, Differential Mode.

PARAMETER		MIN	TYP	MAX	UNITS
Cross Axis Sensitivity			2	3	%
Bias Calibration Error	-002			4.0	% of Span
	-005 thru -200			1.5	
Bias Temperature Shift (T_C= -40 to +80°C)	-002		100	200	(ppm of span)/°C
	-005 thru -200		50	100	
Scale Factor Calibration Error[3]			1	2	%
Scale Factor Temperature Shift (TC= -40 to +80°C)	-002 thru -010	-250		+150	ppm/°C
	-025 thru -200	-150			
Non-Linearity (-90 to +90% of Full Scale) [3, 4]	-002 thru -050		0.15	0.5	% of span
	-100		0.25	1.0	
	-200		0.40	1.5	
Power Supply Rejection Ratio		50	>65		dB
Output Impedance			1		Ω
Output Common Mode Voltage			2.5		VDC
Operating Voltage (reduce max by 0.4V/°C above 110°C)		8		32	VDC
Operating Current (AOP & AON open)			27	30	mA DC
Mass (not including cable)			21		grams
Cable Mass			14		grams/meter

Note 3: 100g versions and above are tested from -65g to +65g. Note 4: Tighter tolerances may be available upon request.

CABLE SPECIFICATION & LENGTH CONSIDERATIONS

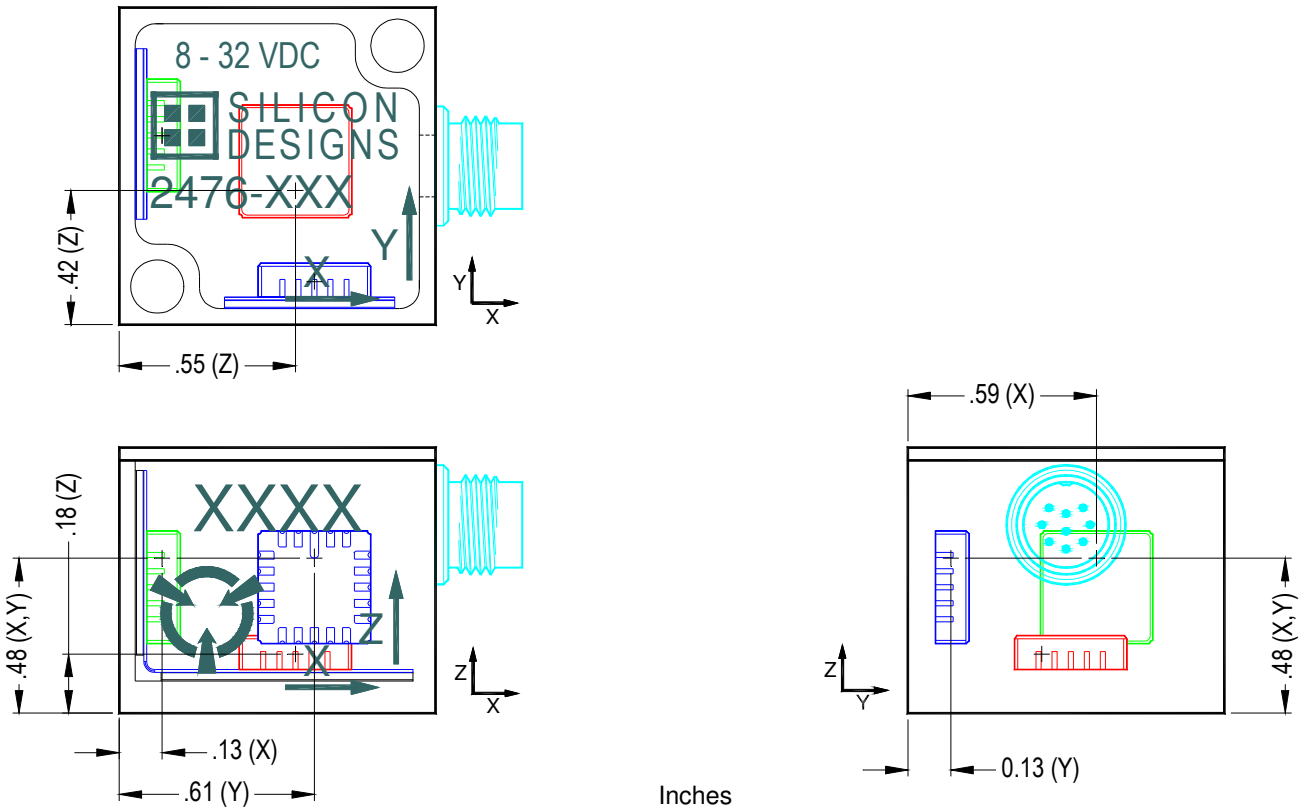
NOTE: The connector has 9 pins, but only 8 pins are used for the 8 wires in the cable.

The case connector pins and cable connector sockets are gold plated beryllium-copper. The cable connector shells are gold plated brass. The cable consists of four 30 AWG (7x38) silver-plated copper wires with PTFE insulation surrounded by a braided shield. The black FEP shield jacket has a nominal outer diameter of 0.100". Cable lengths of up to 50 feet (15 meters) can be added to the standard 1-meter cable without the need to test for output instability. For lengths longer than 50 feet, we recommend you check each individual installation for oscillation by tapping the accelerometer and watching the differential output for oscillation in the 20kHz to 50kHz region. If no oscillation is present then the cable length being used is OK. From the standpoint of output current drive and slew rate limitations, the model 2480 is capable of driving over 2000 feet (600 meters) of its cable type but at some length between 50 and 2000 feet, each device will likely begin to exhibit oscillation.

DIFFERENTIAL vs. SINGLE ENDED OPERATION

The model 2476 accelerometer will provide its best performance when you connect it to your instrumentation in a differential configuration using both the **AOP** and **AON** output signals. But a differential connection may not always be possible. In such cases, it is perfectly fine to connect the accelerometer to your instrumentation in single ended mode by connecting **AOP** and **GND** to your instrumentation and leaving **AON** disconnected. Keep in mind that the signal to noise ratio is reduced by half for a single-ended vs. a differential connection.

SENSOR LOCATIONS



Inches