



Reliable Electronic Vibration Switch Protection At the Low Price of a Mechanical Switch!!!!

An IMI Sensors Industry Exclusive!

Highlights

- Fully USB programmable
- Solid state relay for reliable operation
- Monitors vibration velocity for consistent results
- 2-wire operation using existing switch wires
- *Remote Reset Anywhere™* for safety and convenience
- Exclusive MAVT™ sets alarm threshold automatically
- Eliminates false trips with programmable delays
- Hazardous area approvals



The *All New* Model 686B01 Smart Vibration Switch from the IMI Sensors division of PCB Piezotronics is versatile, fully USB programmable, reduced in price, and directly competitive with mechanical vibration switches. It also provides a significantly lower cost alternative for many electronic switch applications.

Applications

- 24/7 machinery protection
- Cooling tower fans & gearboxes
- Fin fans
- Motors & pumps

Get Smart and replace your troublesome mechanical vibration switches with the economical, electronic Smart Vibration Switch today!



Replaces Mechanical and Electronic Vibration Switches



Model 686B01
Smart Vibration Switch with 2-pin MIL Connector
(also available with integral cable)



Model EP686B7X
Smart Vibration Switch with Explosion Proof Condulet Enclosure



Model 686B7X
Smart Vibration Switch with Terminal Block Connector

The Versatile Smart Vibration Switch

New Model 686B01 Smart Vibration Switch is now fully USB programmable and more cost-effective than ever. With two-wire operation, universal power, and a single 1/4-28 stud mount, it is simple to install and a near drop-in replacement for mechanical vibration switches. With Remote Reset Anywhere™, you no longer need to climb your cooling tower to reset a tripped switch. Simply install the reset button at any convenient location in the 2-wire power loop for safe and easy access. This unique, low cost vibration switch can replace most mechanical and many electronic vibration switches.

Model 686B01 Smart Vibration Switch is a smart alternative to troublesome mechanical vibration switches. Mechanical vibration switches, also known as earthquake switches, can stick, corrode, be inconsistent in their protection, and are notorious for false trips or-worse yet-not tripping at all. This can result in dangerous and costly catastrophic failures of cooling towers fans. The Smart Vibration Switch has an embedded precision accelerometer, a solid state relay, and adjustable time delays providing much better accuracy, repeatability and reliability than earthquake switches. Additionally, it monitors vibration velocity, which is a much more repeatable and consistent measurement than acceleration. It is housed in a robust stainless steel housing that is hermetically sealed for use in the harshest environments and is Intrinsically Safe (optional) for use in hazardous areas.

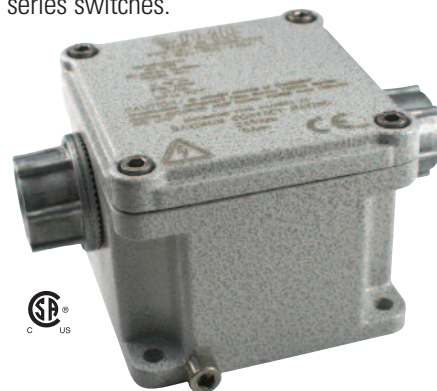
Comparison of Mechanical Vibration Switches to the IMI Sensors Smart Vibration Switch

Feature	SVS	MVS
2-wire operation	✓	✓
Low Cost	✓	✓
Latching	✓	✓
Non-Latching	✓	
Normally Open	✓	✓
Normally Closed	✓	✓
Remote Reset Anywhere™	✓	
Precision Measurements	✓	
Alarm on Velocity	✓	
Power On Delay	✓	
Start Up Delay	✓	
Operation Delay	✓	
Residual Vibration Threshold	✓	
USB Programmable	✓	
MAVT™	✓	
Small Footprint	✓	
Single Stud Mount	✓	
Hermetically Sealed	✓	

A Low-cost Electronic Switch Replacement

In addition to being a more reliable option than mechanical vibration switches, the unique Model 686B01 Smart Vibration Switch is a much lower cost solution for many Electronic Vibration Switch applications as well. The Smart Vibration Switch is a great choice in applications where a single relay provides sufficient protection and/or an overall vibration output (typically 4-20 mA) is not required. Multiple Smart Vibration Switches may be used in series or parallel to monitor several points or machines as necessary. They can also be used in conjunction with external SPST and DPDT switches to increase current capacity or when such switches are required.

When a full featured electronic vibration switch is required that includes dual relays and 4-20 mA vibration output, select an IMI Sensors Series 685B switch. It is lower cost and a direct replacement (with optional adapter plate) for Series 440, 450, and 6140 series switches.



Full Featured Model 685B Electronic Vibration Switch



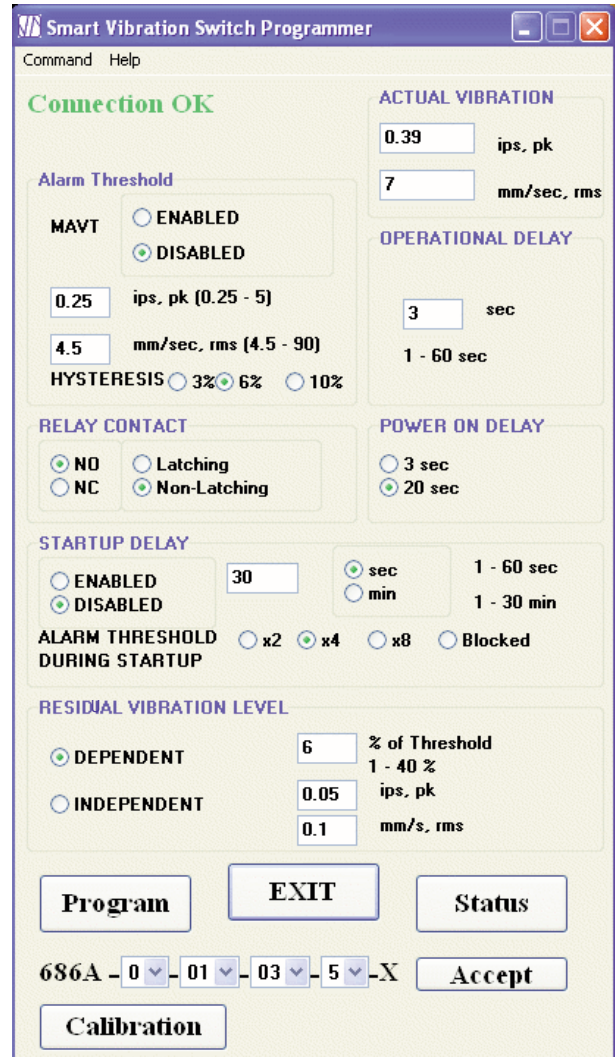
EE151 Software

Optional Model 070A85 USB Programmer

USB Programmable

The Smart Vibration Switch is fully user programmable, using the optional Model 600A15 USB Programmer Kit that includes: Model 070A85 USB programmer, EE151 Software, Model 042CD001AD cable, and Model 080A212 magnet. This can be used in conjunction with any PC to read or change the current settings of the Smart Vibration Switch, or calibrate the unit. The user can enable/disable and set the following switch parameters.

- Alarm threshold level & hysteresis
- Power-on, startup & operating delays
- Normally open or normally closed
- Latching or non-latching
- Residual vibration level



Smart Vibration Switch Programmer Screen



Model 080A212 Magnet (Optional Accessory)



Series 686B Electronic Vibration Switch with MAVT™ Option

EXCLUSIVE MAVT™

The Alarm Threshold Level can be set either numerically through USB programming, or if enabled, can also be set using Magnetically Adjustable Vibration Threshold (MAVT™). This feature can be enabled via USB programming or, if requested, as supplied by the factory.

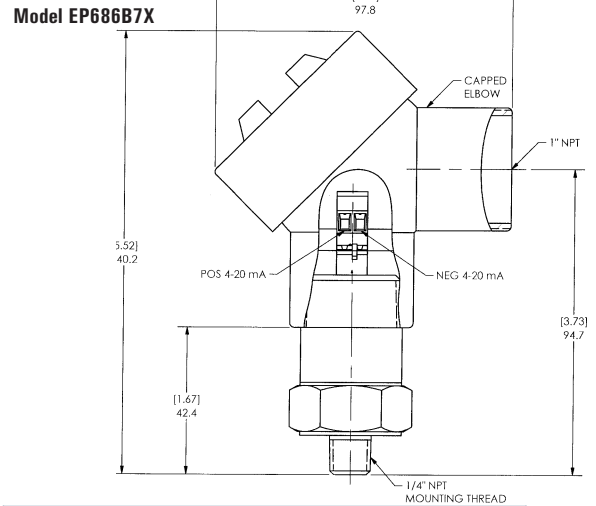
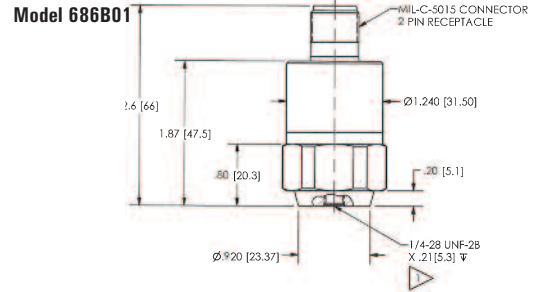
The *Exclusive* MAVT™ feature can be used to automatically set the alarm threshold level in the field without knowing anything about the equipment's actual vibration level. Mount the Smart Vibration Switch on an operating machine and touch the Model 080A212 magnet (optional) to the sensor to start the process. This convenient feature permits any machine to become vibration switch protected within seconds. MAVT™ can also be used with the switch mounted on a calibrated vibration shaker in the laboratory for precise setting of the alarm threshold value.

Simply Touch the Magnet to the Switch to Start the Process!



Specifications and Ordering Information

Model 686B01 Smart Vibration Switch Specification		
Electrical	English	SI
Power Required	24 to 240 V DC/V AC 50 to 60 Hz	
Maximum Current (relay closed)	500 mA	
Leak Current (relay open)	1 mA	
Sensor Type	Piezoelectric Accelerometer	
USB Programmable Parameters	English	SI
Alarm Threshold Level	0.25 to 5.0 in/sec pk	4.5 to 90.0 mm/sec rms
Alarm Threshold Hysteresis	3, 6, or 10%	
MAVT™	Enabled/Disabled	
Relay Contacts	Normally Open or Normally Closed	
Relay Latching	Latching or Non-Latching	
Power On Delay	3 or 20 seconds	
Startup Delay Status	Enabled/Disabled	
Startup Delay	1-60 sec or 1-30 min	
Operational (alarm) Delay	1 to 60 seconds	
Alarm Threshold During Startup	x2, x4, x8, Blocked	
Residual Vibration Level (Below this level the machine is assumed not operating.)	Dependent or Independent of alarm threshold	
Dependent	Set as % of alarm threshold level in a rage of 1 to 40%	
Independent	User defined vibration level	
Operational Parameters	English	SI
Frequency Range	180 to 60k cpm	3 to 1000 Hz
Transverse Sensitivity	<5%	
Relay Type	SPST Form A or B MOSFET	
Relay Rating	24 to 240 VAC/VDC, 0.5 A	
Environmental	English	SI
Temperature Range	-40 to +185° F	-40 to +85° C
Storage Temperature Range	-40 to +257° F	-40 to +125° C
Overload Limit (Shock)	5000 g pk	49,050 m/s ² pk
Mechanical	English	SI
Size (Hex x Height)	1.25 in x 2.6 in	1.25 in x 66 mm
Weight	5.4 oz	153 g
Mounting Thread	1/4-28 UNF-2B (Female)	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m
Housing Material	Stainless Steel	
Sealing	Welded Hermetic	
Electrical Connector	2-Pin Mil-C-5015	
Electrical Connection Position	Top	
Optional Versions	Option Designation	
Metric Installation	M	
EX - CSA Hazardous Area Approval	EX	
Hazardous Area Approval	Class I, Div. 2, Groups A,B,C and D	
	Ex nA IIC T3	
	AEx nA IIC T3	



686B01 Factory Default Settings

Parameter	Setting(s)		
MAVT™	Enabled		
Alarm Threshold	0.6 ips		
Hysteresis	3%		
Operational Delay	3 sec		
Relay Contact	Normally Closed	Latching	
Power-On Delay	3 sec		
Startup Delay	Enabled	3 sec	Blocked
Residual Vibration Level	Dependent	6%	

Supplied Accessories

Model 081A41 Mounting Stud (1/4-28 to 1/4-28 x 0.625") or Model M081A61 Mount Stud (1/4-28 to M6 x 1 cm) for Metric Mount

Optional Accessories

600A15 USB Programming Kit
070A85 USB Programmer
EE151 Software
042CD001AD Cable
080A212 Magnet
080A212 Magnet (required for use with MAVT™ operation and USB Programming)



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IMI Sensors designs and manufactures a full line of accelerometers, sensors, vibration switches, vibration transmitters, cables and accessories for predictive maintenance, continuous vibration monitoring, and machinery equipment protection. Products include rugged industrial ICP® accelerometers, 4-20 mA industrial vibration sensors and transmitters for 24/7 monitoring, electronic and mechanical vibration switches, the patented Bearing Fault Detector, high temperature accelerometers to +900 °F (+482 °C), 2-wire Smart Vibration Switch, and the patented Reciprocating Machinery Protector. CE approved and intrinsically safe versions are available for most products.

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