VIBRATION SWITCHES

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VIBRATION SWITCHES

WHAT IS A VIBRATION SWITCH?

A vibration switch is a device that (1) recognizes the amplitude of the vibration to which it is exposed and (2) provides some sort of response when this amplitude exceeds a predetermined threshold value. The switch response is typically an electrical contact closure or contact opening. The electrical contact may be either an electromechanical relay or solid-state triac.

WHY USE A VIBRATION SWITCH?

Vibration switches are primarily used for protecting critical machinery from costly destructive failure by initiating an alarm or shutdown when excessive vibration of the machinery is detected. Conversely, a vibration switch can be utilized to warn when there is an absence of vibration, such as when a conveyor ceases to function due to a broken drive belt.

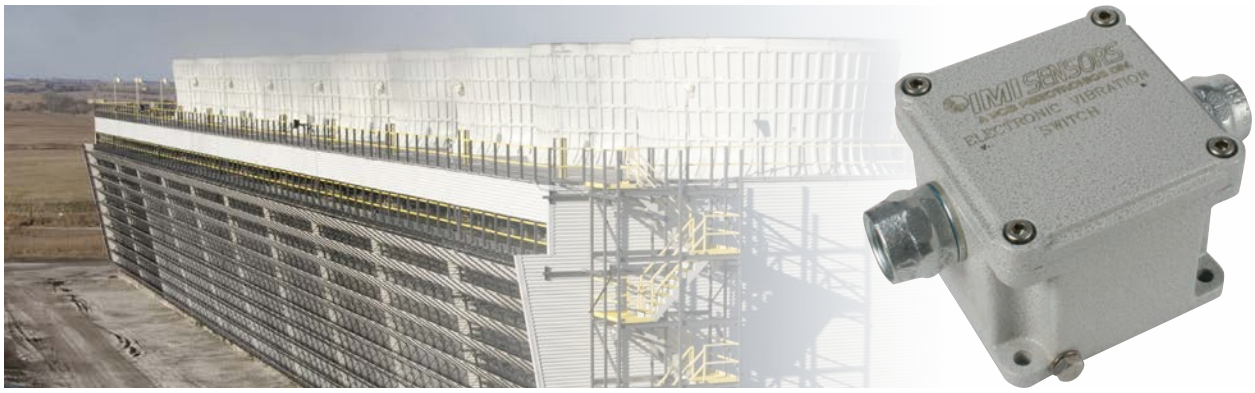
APPLICATIONS:

- Cooling Tower Fans & Gearboxes
- Fin Fans
- HVAC Systems
- Blowers
- Motors
- Pumps
- 24/7 Machinery Protection

WHICH IS THE RIGHT SWITCH FOR YOU?

Feature	SMART	Electronic	Mechanical
Meets Updated CTI Vibration Standard	✔	✔	✘
2-wire operation	✔	✘	✔
Low Cost	✔	✘	✔
Latching	✔	✔	✔
Non-Latching	✔	✔	✘
Normally Open	✔	✔	✔
Normally Closed	✔	✔	✔
Remote Reset	✔	✔	✔
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	✔	✘	✘
Dual Relays	✘	✔	✘
RV Out	✘	✔	✘
4-20 mA Out	✘	✔	✘

✔ = Standard Feature ✘ = Feature Not Available



ELECTRONIC VIBRATION SWITCH - SERIES 685B

PRODUCT HIGHLIGHTS:

- Offers two set points with individual alert and alarm relays
- 4-20 mA output signal for vibration monitoring
- Analog, 100 mV/g output signal for fault diagnostics
- Utilizes built-in or remote vibration sensor
- Adjustable time delays for alert or alarm
- Accepts 4-20 mA calibrator input signal for accurate threshold value set-up
- Explosion proof models available*

Electronic switches require power to operate and utilize an input signal that is provided by an electronic vibration sensor, or accelerometer. This sensor may be built into the switch enclosure, or remotely located. A remote sensor is advantageous when the vibration switch enclosure will not fit within the installation location, or if the temperature at the installation location exceeds the capability of the switch's electronic components.

The 685B series are precision electronic vibration switches. They provide two relay or triac outputs, generate a 4-20 mA vibration output signal, and offer an analog vibration signal for FFT analysis and fault diagnostics.

SPECIFICATIONS	
Model Number	**Series 685B**
Measurement Range (pk)	1.5/3.0 in/sec, 5g, or 15/50 mils (pk-pk)
Frequency Range (±3 dB)	120 to 60k cpm [6] 2 to 1000 Hz
Power	85 to 245 VAC, 50-60 Hz or 24 VDC (10%)
Relay Types*	SPDT Form C Relay or Triac
Relay Rating	10A 30VDC/240VAC (Relay) or 230 VAC 5A (Triac)
Relay Contacts	Normally Open or Normally Closed
Relay Latching	Latching or Non-Latching
Output (RMS Vibration)	4-20 mA
Output (Analog Vibration)	100 mV/g 10.2 mV/(mm/sec^2)
Delay (Alarm)	See "Ordering Guide" (right)
Set Point Adjustment	Single Turn Potentiometer
Reset Function	Internal Pushbutton or Remote Switch
Physical	
Size	3.5 x 2.8 x 3.5" 90 x 70 x 90 mm
Weight	1.85 lb 839 gm
Sensing Element	Internal Piezoelectric Accelerometer
Housing Material	Aluminum Alloy
Enclosure Rating	NEMA 4X IP66
Mounting Torque (Cover Screw)	4.1 ft-lb
Enclosure Ports	Cord Grips or Conduit Hubs
Operating Temperature Range	-22 to 158 °F -30 to 70 °C
Hazardous Area Approval*	Class 1 Div 1 or Class 1 Div 2, ABCD

*Visit pcb.com/vibrationswitches for all configuration options and details.

SMART VIBRATION SWITCH - SERIES 686C

PRODUCT HIGHLIGHTS:

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

The Smart Vibration Switch is highly versatile, fully user programmable via USB, low cost, and a drop-in replacement for most popular mechanical vibration switches. The Smart Vibration Switch provides the reliability not found in mechanical switches. It is a lower cost alternative when single relay action is required vs. higher cost dual relay models.

This revolutionary two-wire electronic switch offers the simplicity of a mechanical switch with the precision of an electronic switch. It has a built-in piezoelectric accelerometer, installs easily, and has the smallest footprint of any vibration switch on the market.

The Alarm Threshold Level (set point) can also be set using Magnetically Adjustable Vibration Threshold (MAVT™). 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 .

USB PROGRAMMABLE SETTINGS INCLUDE:

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

SPECIFICATIONS	
Model Number	**Series 686C**
Measurement Range (pk)	0.25 to 4.0 in/sec 4.5 to 8.0 mm/sec
Frequency Range (±3 dB)	120 to 60k cpm 2 to 1000 Hz
Power	24 to 240 V AC/DC, 50 to 60 Hz
Relay Types	SPST Form A or B MOSFET
Relay Rating	0.5A 24 to 240 V AC/DC
Relay Contacts	Normally Open or Normally Closed
Relay Latching	Latching or Non-Latching
Set Point Adjustment	USB Programmable Values
Reset Function	Internal Pushbutton or Remote Switch
Physical	
Size	1.25" Hex, 2.6" h 31.8 mm Hex, 66mm h
Weight	5.2 oz 148 g
Sensing Element	Internal Piezoelectric Accelerometer
Housing Material	Stainless Steel
Enclosure Rating	NEMA 4X IP66
Connector Types	2-pin MIL, Integral Cable, or Screw Terminal
Operating Temperature Range	-40 to 185 °F -40 to 85 °C
Hazardous Area Approval*	Class 1 Div 1 or Class 1 Div 2, ABCD
686C01 Default Settings	MAVT Activated, 0.60 ips Alarm Threshold, 6% Hysterisis, 6 second Operational Delay, Latching Normally Open Relay, 3 seconds Power On Delay, 3 second Startup Delay, 2x Alarm Threshold during startup, 5% Residual Vibration Level

*Visit pcb.com/SmartVibrationSwitch for all configuration options and details.

MECHANICAL VIBRATION SWITCH - SERIES 685A

PRODUCT HIGHLIGHTS:

- Unique patent pending, spring-loaded, magnetically coupled sensor, requiring no power
- Offers cost effective protection for less critical situations
- 2-wire operation uses existing mechanical switch wires
- Provides better control over trip sensitivity
- Remote reset models available

For machines requiring simplified contact closure protection, 685A series offers a cost-effective approach to vibration protection. They offer the smallest mechanical switch footprint available in either NEMA 4 or explosion proof housings. The three axis protection allows confident, reliable monitoring of small plant equipment in less critical situations, where the precision of an electronic switch isn't necessarily required. Both the weatherproof and explosion proof versions contain manual internal adjustability with both manual and remote reset options availability for ease of operation.

SPECIFICATIONS	
Model Number	**Series 685A**
Measurement Range (pk)	7 g pk 68.7 m/s² pk
Frequency Range (±3 dB)	120 to 60k cpm 0 to 100 Hz
Power	n/a
Relay Types	2 x SPDT (DPDT) Form C Relay
Relay Rating	5A 480 VAC, 15A 250 VDC
Relay Contacts	2 x SPDT (DPDT)
Relay Latching	Latching
Set Point Adjustment	Linear Adjust Control Screw
Reset Function	Manual and Remote Reset Options Available
Physical	
Size	4.35 x 3.30 x 4.35" 110.5 x 110.5 x 83.8 mm
Weight	2.5 - 2.8 lb 1132 - 1271 g
Sensing Element	Spring Loaded Magnet (Linear Adjust)
Housing Material	Aluminum Alloy
Enclosure Rating	NEMA 4X IP66
Enclosure Ports	Conduit Hubs
Operating Temperature Range	-13 to 140 °F -25 to 60 °C

*Visit pcb.com/MechanicalVibrationSwitch for all configuration options and details.

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