



Vibration Switches

For 24/7 Protection of Cooling Towers, Fin Fans, HVAC Systems, Blowers, Motors and Other Critical Machinery



- Smart Switches
- Electronic Switches
- Mechanical Switches



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 **IMI SENSORS**
A PCB PIEZOTRONICS DIV.

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Smart Vibration Switches



Model 686B01
Smart Vibration Switch
with 2-pin MIL Connector
Explosion Proof Version Available
(EX686B01)



Models EP686B7X & EX686B7X
Smart Vibration Switch with
Explosion Proof Condulet Enclosure



Model 686B7X
Smart Vibration Switch
with Terminal Block Connector



Model 686B11
Smart Vibration Switch
with Integral Cable

Highlights

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

Applications

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

The *All New Electronic* Smart Vibration Switch from IMI Sensors 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 includes an embedded piezoelectric accelerometer for accurate measurement, monitors vibration velocity for more consistent results, and 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

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	✓	

Low Cost Electronic Switch Replacement

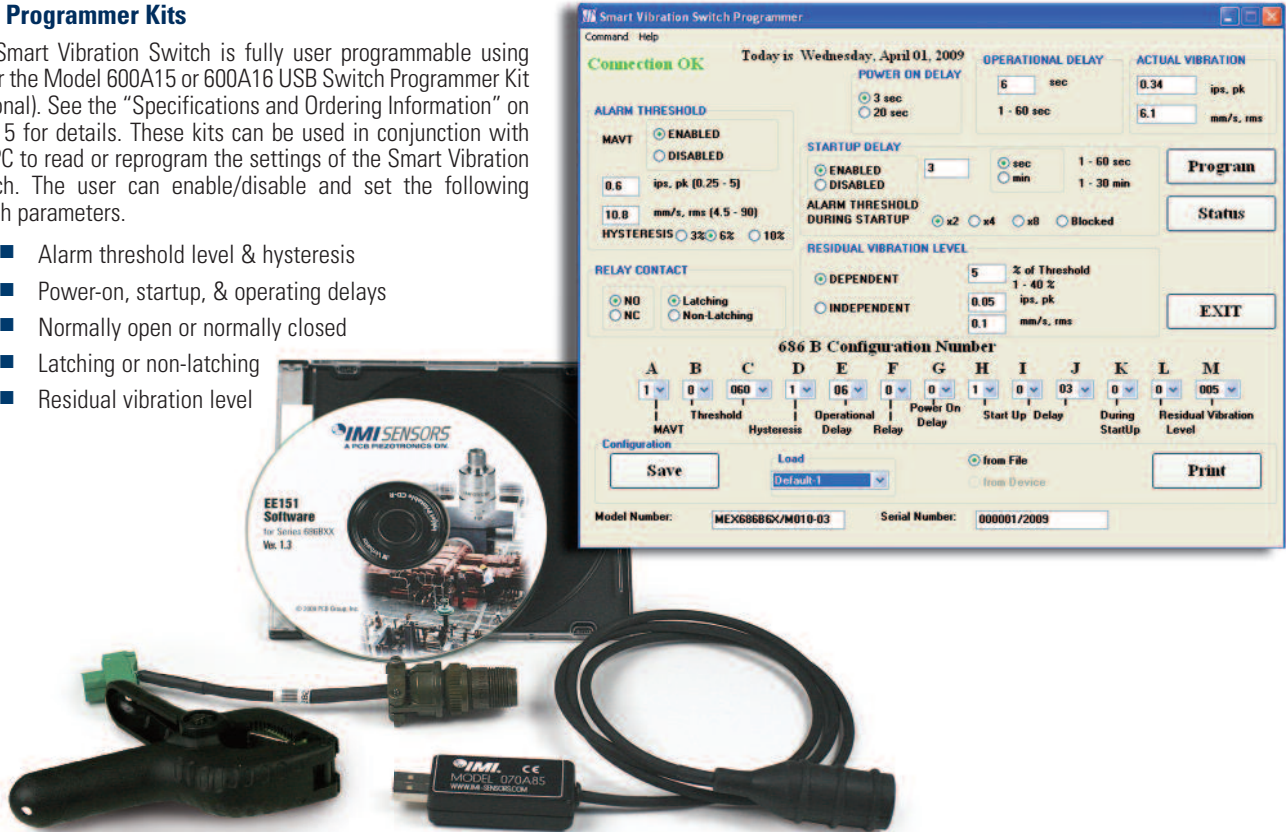
In addition to being a more reliable device than mechanical vibration switches, the Unique Series 686B Smart Vibration Switch is a much lower cost solution for many conventional Electronic Vibration Switch applications as well. The Smart Vibration Switch is a great choice in applications where a single relay provides sufficient protection and/or an overall vibration output (typically 4-20 mA) is not required. Multiple Smart Vibration Switches can 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 relays to increase current capacity or when such relays are required.



USB Programmer Kits

The Smart Vibration Switch is fully user programmable using either the Model 600A15 or 600A16 USB Switch Programmer Kit (optional). See the "Specifications and Ordering Information" on page 5 for details. These kits can be used in conjunction with any PC to read or reprogram the settings of the Smart Vibration Switch. 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



Model 600A15 USB Switch Programming Kit



Photo courtesy of Midwest Towers, Inc.

Industry Exclusive!

Series 686B
Smart Vibration
Switch with
MAVT™ Option

Exclusive MAVT™

The Alarm Threshold Level (set point) can be set either numerically through USB programming, or if enabled, using Magnetically Adjustable Vibration Threshold (MAVT™). This feature can be enabled by the user via USB programming, or if requested, enabled 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 magnet (contained in the USB Switch Programmer Kit) to the sensor to start the process. *Caution should be taken to disconnect the Smart Vibration Switch from the machine's trip circuit when using this feature.* 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 for precise setting of the alarm threshold value.

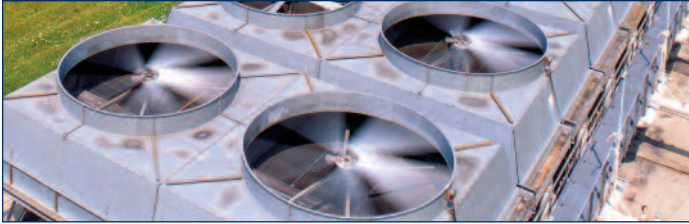


Model 080A121 Magnet (Optional Accessory)

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



Vibration Switches



Series 686B Smart Vibration Switch Specifications

Performance

Alarm Threshold Level	0.25 to 4.0 in/sec pk 4.5 to 8.0 mm/sec rms
Frequency Range (±3 dB)	180 to 60k cpm 3 to 1000 Hz
Alarm Threshold Hysteresis	3, 6, or 10%
Residual Vibration Level (Reference)	Dependent or Independent of alarm threshold
Residual Vibration Level (Level)	1 to 40% of alarm threshold level
MAVT™	Enabled/Disabled
Transverse Sensitivity	<3%
Power On Delay	3 or 20 seconds
Startup Delay (Active)	Enabled/Disabled
Startup Delay (Time)	1-60 sec to 1-30 min
Startup Delay (x Alarm Threshold)	x2, x4, x8, Blocked
Operational (alarm) Delay	1 to 60 seconds
Relay Type	SPST Form A or B MOSFET
Relay Rating	24 to 240 VAC/VDC, 0.5 A
Relay Contacts	Normally Open or Normally Closed
Relay Latching	Latching or Non-latching

Environmental

Temperature Range (Operating)	-40 to +185 °F -40 to +85 °C
Temperature Range (Storage)	-40 to +257 °F -40 to +125 °C
Overload Limit (Shock)	5000 g pk 49,050 m/s ² pk
Humidity Range (Condensing)	0 to 100%

Electrical

Power Required	24 to 240 V DC/AC 50 to 60 Hz
Current Rating (Relay Closed)	500 mA
Leak Current (Relay Open)	1 mA
Electrical Isolation (Case)	>10 ⁸ ohms

Physical

Size (Hex)	1.25 in
Size (Height)	2.6 in 66 mm
Weight	5.2 oz 148 g
Mounting Thread	1/4-28 UNF-2B (Female)
Mounting Torque	2 to 5 ft-lb 2.7 to 6.8 N-m
Sensing Element (Internal)	Piezoelectric Accelerometer
Housing Material	Stainless Steel
Sealing	Welded Hermetic
Electrical Connection	See Models Available
Electrical Connection Position	Top

Supplied Accessories

081A41 Mounting stud, 1/4-28 x 0.563" long stainless steel screw with hex socket and brass tip

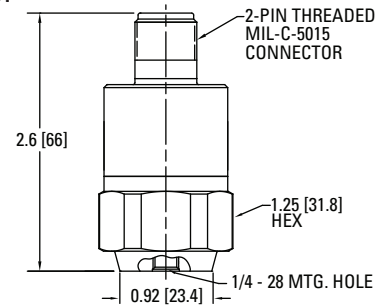
Optional Versions

M (Metric Mount) - Includes Model M081A61, 1-4-28 to M6 x 1 x 8.6 mm long mounting stud

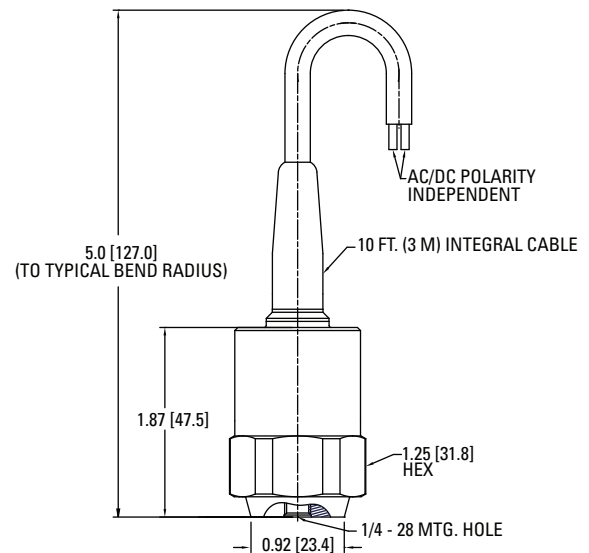
EP (Explosion Proof) - Includes right angle conduit with 1 in NPT threads, terminal block connection, and integral 1/4 NPT mounting stud

EX (Intrinsically Safe, CSA US & Canada) - See EX model tables

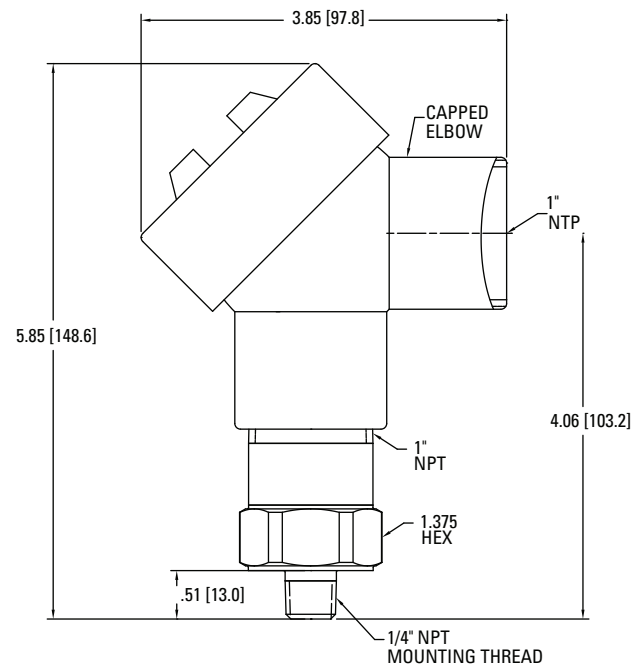
Model 686B01



Model 686B1X



Model EP686B7X



Vibration Switches



EX Models - CSA approved Intrinsically Safe and Non-Incendive for Hazardous Locations

Class I, Div. 2, Groups A,B,C, D Ex nL IICT3 AEx nA IICT3			
	Specification	EX686B0x	EX686B1x
Specification	EX686B0x	EX686B1x	EX686B6x
Voltage Rating	10 to 30 VDC	10 to 30 VDC	10 to 30 VDC
Current Rating	100 mA	100 mA	100 mA
Mounting Thread	1/4-28 UNF-2B (Female)	1/4-28 UNF-2B (Female)	1/4-28 UNF-2B (Female)
Electrical Connection	2-Pin MIL-C-5015	Molded Integral Cable	Integral armored Cable
Cable Length	N/A	10 ft	10 ft
Cable Type	N/A	Polyurethane (Model 052)	Armored Polyurethane (Model 047)

EX Models - CSA approved for Hazardous Locations

Class I, Div. 2, Groups A,B,C, D Ex nA IICT3 AEx nA IICT3	
	Specification
Specification	EX686B7x
Voltage Rating	24 to 240 VDC or VAC 50 to 60 Hz
Current Rating	500 mA
Mounting Thread	Integral 1/4 NPT
Electrical connector	Terminal Block
Models include right angle conduit with 1" NPT threads	

Series 686B Smart vibration Switch Models Available

Electrical Connection	Basic		Optional Models			
	Model	Intrinsically Safe	Explosion Proof	Metric Mount	Metric Mount Intrinsically Safe	Metric Mount Explosion Proof
2-Pin MIL-C-5015	686B0x	EX686B0x	N/A	M686B0x	EXM686B0x	N/A
Integral 10' Polyurethane Cable (Model 052)	686B1x	EX686B1x	N/A	M686B1x	EXM686B1x	N/A
Integral 10' armored Polyurethane Cable (Model 047)	686B6x	EX686B6x	N/A	M686B6x	EXM686B6x	N/A
Terminal Block with integral 1/4 NPT stud	686B7x	EX686B7x	EP686B7x	N/A	N/A	N/A

Note: x in the above model numbers specifies a standard (preprogrammed) configuration

Specifying Integral Cable and Armor Length

If an integral cable length (with or without armor) other than 10 ft (3 m) is required add the following to the end of model number.

To specify English length (feet)	/ xxx - yy	xxx = length of the cable in feet yy = if specifying armored cable and the length of the armor is shorter than the cable, enter the length in feet
To specify metric length (meters)	/ M xxx - yy	xxx = length of the cable in meters yy = if specifying armored cable and the length of the armor is shorter than the cable, enter the length in meters

Series 686B Preprogrammed Models

Add 'EX' Prefix to Any Configurations (left) for Hazardous Area Approvals	Configuration 1	Configuration 2	Configuration 3	Configuration 4
	686B01	686B02	686B03	686B04
	686B11	686B12	686B13	686B14
	686B61	686B62	686B63	686B64
	686B71	686B72	686B73	686B74
Relay Status	Normally Open	Normally Closed	Normally Open	Normally Closed
Relay latching	Latching	Latching	Non-Latching	Non-Latching
MAVT™	Enabled	Enabled	Enabled	Enabled
Alarm Threshold	0.6 ips	0.6 ips	0.6 ips	0.6 ips
Alarm Hysteresis	6%	6%	6%	6%
Power On Delay	3 sec	3 sec	3 sec	3 sec
Startup Delay	Enabled, 3 sec, x2	Enabled, 3 sec, x2	Enabled, 3 sec, x2	Enabled, 3 sec, x2
Operational Delay	6 sec	6 sec	6 sec	6 sec
Residual Vibration Level	Dependent, 5%	Dependent, 5%	Dependent, 5%	Dependent, 5%

Notes:

Other factory configurations are available free of charge. Contact IMI for details. See "Factory Programmed Ordering Guide" on page 7.

Recommended cables for use with the Model 686B0X Switch



XXX = length in feet

USB Switch Programmer Kits

600A16 - USB Switch Programmer Kit for use with 2-Pin MIL-C-5015 models (e.g., 686B01)

- 070A85 - USB Switch Programmer
- EE151 - 686B Programmer Software
- 080A214 - Magnetic Clip for Programming Switch

600A15 - USB Switch Programmer Kit for use with integral cable and terminal strip models (e.g., 686B1x & EX686B7x)

- 070A85 - USB Switch Programmer
- EE151 - 686B Programmer Software
- 042M17 - 042CE001AD Cable + terminal block connector
- 080A214 - Magnetic Clip for Programming Switch

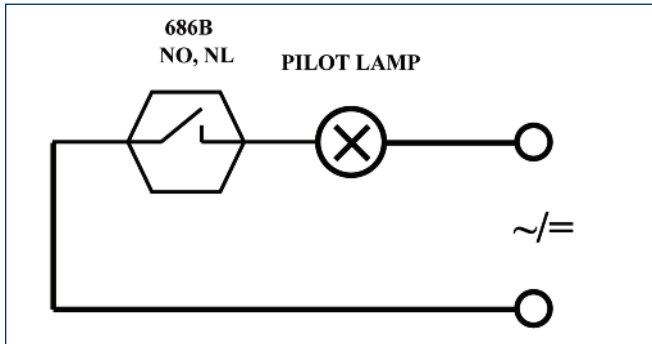


052BRXXXAC Cable & 480C02 Loop Calibrator

For use with MAVT™ option for setting alarm level.

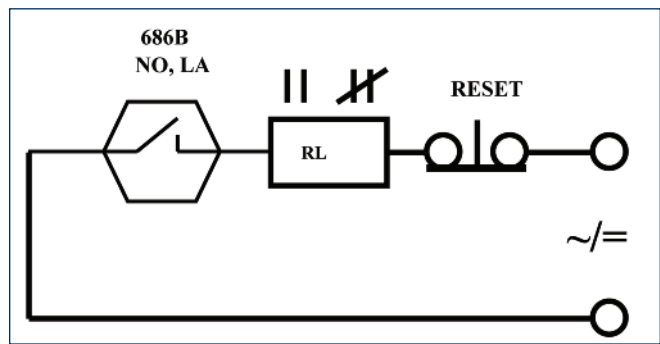


Vibration Switches



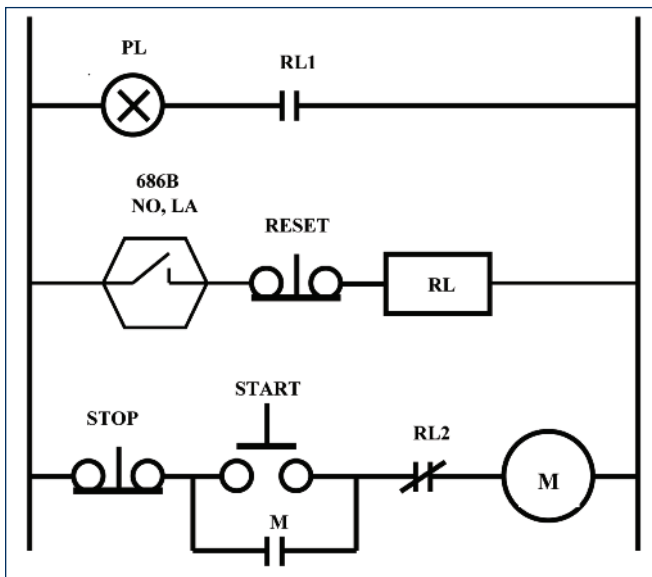
Basic Installation

This is a typical installation for use with a pilot/indicator light (or other load) where the current is ≤ 500 mA. No reset switch is required since the Smart Vibration Switch is set to NL (Non-Latching).



Installation for Use with an External Relay

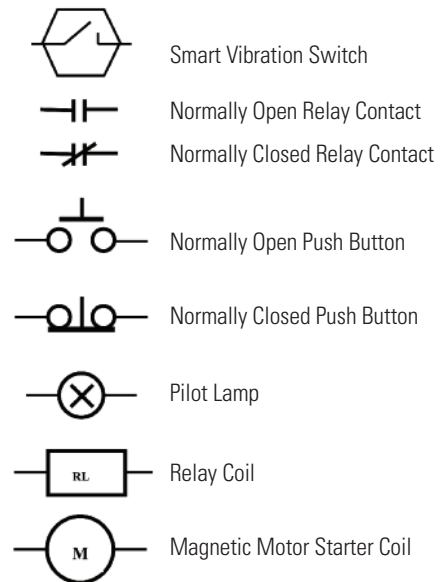
This is a typical installation for use with an external SPDT or DPDT relay (see page 8 for relay selections). This configuration is used when the load requires >500 mA or when using a DPDT relay to switch two circuits using a single Smart Vibration Switch. The switching can be normally open, normally closed, or as shown in the diagram, mixed. The reset switch can be conveniently located anywhere in the 2-wire power loop.



Installation for Motor Protection with an Indicator Light

This is a typical setup for use with both a pilot light and motor protection circuit using a single Smart Vibration Switch in conjunction with an external DPDT relay (see page 8 for relay selections). When the vibration exceeds the alarm threshold level, the normally open Smart Vibration Switch relay closes, latches, and energizes the external DPDT (RL) relay coil. The normally closed RL2 relay contacts open, which shuts down the motor. The normally open RL1 relay contacts close, which illuminate the pilot light.

LEGEND



Recommended General Purpose Relays for use with the Series 686B Smart Vibration Switch

Visit www.omron.com for additional information

Attribute	Omron Model Number				
	MJN2C-AC120	MJN2C-AC240	MJN2C-DC12	MJN2C-DC24	MJN2C-DC110
Contact Form	2 Form C (DPDT)				
Rated Resistive Load - Relay	10 A @ 240 VAC / 28 VDC				
Service Life - Electrical (Min. @ Rated Loads)	100,000 operations "average"				
Max. Resistive Switching Capacity - Relay	2400 VA, 280 W				
Coil Voltage - Nominal	120 VAC	240 VAC	12 VDC	24 VDC	110 VDC
Coil Power Consumption	1.7 VA		1.2 W		
Coil Type	Non-Latching				
Seal Type	Unsealed				
Termination Style	Socket mount				
Operating Temperature Range	-45 to 60° C with no icing or condensation		-45 to 70° C with no icing or condensation		
Dielectric Strength (AC for 1 min)	2500 VAC				
Approved Standards	UL, CSA				



Model
MJN2C-AC24

Sockets for Omron MJN2C Relays

Omron Model Number	Description
PTF11PC	DIN rail mount relay socket
PTF21PC	Chassis mount relay socket



Switch Model Number Template

Prefix Option

- EX** CSA Approved Intrinsically Safe
- EP** Explosion Proof Condulet Enclosure
- M** Metric Installation (Not With EP or EX with Terminal Block)
- EXM** Metric EX Approved (Not With Terminal Block Connection)
- Blank** No Prefix Option

Electrical Connection

- 0** 2-Pin Mil-C-5015
- 1** Integral Cable (Model 052)
- 6** Integral Armored Cable (Model 047)
- 7** Terminal Block

Use for Integral Cable Models Only

M = Metric (m)

Blank = English (ft)

Cable Length

(Specify only if Electrical Connection is 1 or 6)
 Leave blank for default length of 10' (3m)
 Enter integral cable length, e.g., for 150 ft enter 150; for 8 meters enter 008

Cable Termination or Connector

(others available)

- BZ** Blunt Cut
- AD** Pigtail
- AC** BNC

Armor Length

(Specify only if Electrical Connection is 6)
 Leave blank if armor length equals the cable length
 Enter armor length, e.g., for 20 ft enter 20; for 3 meters enter 03
 Maximum armor length = 50 ft (15 m)

Program Configuration

Standard Configurations

A B C D E F G H I J K L M Letters Correspond with Custom Program Configuration

1	1	0	060	1	06	0	0	1	0	03	0	0	005
2	"	"	"	"	1	"	"	"	"	"	"	"	"
3	"	"	"	"	2	"	"	"	"	"	"	"	"
4	"	"	"	"	3	"	"	"	"	"	"	"	"
X	Custom Program Configuration (Fill out form below)												

Custom Program Configuration

A

MAVT™

0	Disabled
1	Enabled

B

Alarm Threshold

0	English	Choose Value Between 0.25 to 4.00 ips pk OR 4.5 to 80.0 mm/sec rms e.g.: 0.25 ips = <table border="1"><tr><td>0</td><td>2</td><td>5</td></tr></table> 25.4 mm/sec = <table border="1"><tr><td>2</td><td>5</td><td>4</td></tr></table>	0	2	5	2	5	4
0	2		5					
2	5	4						
1	Metric							

D

Hysteresis

0	3%
1	6%
2	10%

E E

Operational Delay

Choose Value Between 01 to 60 sec	
--	--

F

Relay Contact

0	Latching, Normally Open
1	Latching, Normally Closed
2	Non-latching, Normally Open
3	Non-latching, Normally Closed

G

Power On Delay

0	3 sec
1	20 sec

H

Start Up Delay

0	Disabled	0	Seconds	Choose Value: 01 to 60 sec OR 01 to 30 min
1	Enabled	1	Minutes	

I

J J

K

Alarm Threshold During Startup (Multiplier of the Alarm Threshold)

0	x2
1	x4
2	x8
3	Blocked

L

Residual Vibration Level

0	Dependant	For Dependant Choose Value between 001 to 040% of Alarm Threshold For Independent Choose Value Between 0.01 to 4.00 ips OR 00.1 to 80.0 mm/sec
1	independent	

M M M



IMI Configuration Number:

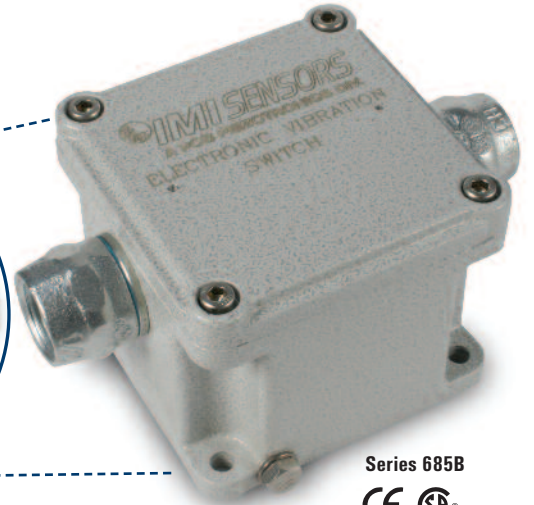
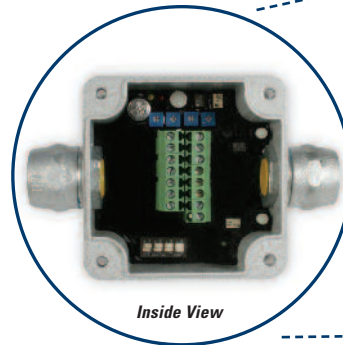
A	B	C	D	E	F	G	H	I	J	K	L	M



Vibration Switches

Series 685B Electronic Vibration Switch

- 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
- Choice of AC or DC power
- Adjustable time delays for alert or alarm
- Accepts 4-20 mA calibrator input signal for accurate threshold value set-up
- Optional adaptors for retrofitting existing switch installations
- Explosion proof models available (contact factory for details)  



Series 685B
 



**Model 685XXXXA5X
Visible Display**



NEMA 4X Version



Explosion Proof Version

Series 685B		
Performance	English	SI
Measurement Range	see model matrix	
Frequency Range(± 3 dB)	120 to 60k cpm	2 to 1000 Hz
Threshold Set Point (alarm)	10 to 100% FS measurement range	
Threshold Set Point (alert)	10 to 100% of Alarm Set Point	
Relay Time Delay (both relays)	0 to 45 Seconds	
Start-up Delay	20 Seconds	
Relay Action (switch selectable)	latching or non-latching	
Output (Analog Vibration Signal)	100 mV/g	10.2 mV/(m/s ²)
Output (Proportional to Range)	4-20 mA	
Environmental		
Operating Temperature Range	-22 to +158 °F	-30 to +70 °C
Storage Temperature Range	-40 to +257 °F	-40 to +125 °C
Enclosure Rating	NEMA 4X	IP66
Hazardous Area Approval*	Class 1 Div 1 & Class 1 Div 2	
Electrical		
Power Supply Requirement	see model matrix	
Current Draw	< 150 mA	
Integral Sensor Type	piezoelectric accelerometer	
Remote Sensor Option	100 mV/g	10.2 mV/(m/s ²)
Relay Type & Contact Capacity	see model matrix	
Calibration Input Signal	4-20 mA	
Physical		
Size (w x h x d)	3.5 x 2.8 x 3.5 inch	90 x 70 x 90 mm
Weight	1.85 lb	839 gm
Housing Material	aluminum alloy	
Internal Electrical Connectors	screw terminals	
Optional External Analog Connector	BNC jack	
Wire Size for Screw Terminals	24 to 14 AWG	0.2 to 2.5 mm
Enclosure Ports	see model matrix	
Mounting Holes	0.21 inch	5.4 mm
Indicators/Controls		
Power-on LED	green	
Alert LED	yellow	
Alarm LED	red	
Alarm Set Point Adjustment	single turn potentiometer	
Reset Function	internal momentary push button or remote contact closure	
Relay Latch Selection Option	internal slide switch	
Normally Open Normally Closed Option	internal slide switch	
Optional Accessory		
Model 080A209 adaptor plate for retrofit of existing switch installations		



How to Order

Base Model

685B Electronic Vibration Switch with two set point relays, time delays, internal pushbutton reset, remote reset via contact closure, 4-20 mA test/calibration insertion signal capability and both 4-20 mA and analog 100 mV/g output signals available on screw terminals

Vibration Sensor Options

- 0** Built-in accelerometer
- 1** Remote 100 mV/g accelerometer (not supplied)
- 2** Remote 100 mV/g accelerometer, low frequency ~1 Hz (not supplied)
- 3** Built-in accelerometer, low frequency ~1 Hz
- 4** Remote 100 mV/g accelerometer w/sensor fault detection (not supplied)
- 5** Remote 100 mV/g accelerometer w/sensor fault detection, low frequency ~1 Hz (not supplied)

Measurement Range

- 0** 0 to 1.5 in/sec peak velocity
- 1** 0 to 5 g peak acceleration
- 2** 0 to 15 mils peak to peak displacement
- 3** 0 to 50 mils peak to peak displacement
- 4** 0 to 3.0 in/sec peak velocity

Power Required

- 0** 85 to 245 VAC, 50/60 Hz
- 1** 24 VDC +/- 10%

Relay Type (two provided)

- 0** Triac, 5 amp, 230 VAC, 0-45 sec adjustable time delay
- 1** Electromechanical relay, 10 amp Form C, SPDT, 30 VDC/240 VAC, 0-45 sec adjustable time delay
- 2** Triac, 5 amp, 230 VAC, 0-12 sec adjustable time delay
- 3** Electromechanical relay, 10 amp Form C, SPDT, 30 VDC/240 VAC, 0-12 sec adjustable time delay

Enclosure Type

- A1** Standard enclosure, NEMA 4X, CSA class 1 div 2 approved, internal reset and analog signal
- A2** Same as A1 plus external pushbutton reset
- A3** Same as A1 plus external BNC jack for analog vibration signal output
- A4** Same as A1 plus external pushbutton reset and external BNC jack for analog vibration signal output
- A5** Same as A3 plus LCD readout panel with velocity in inches per second
- C1** CSA approved explosion proof for class 1 div 1 installations

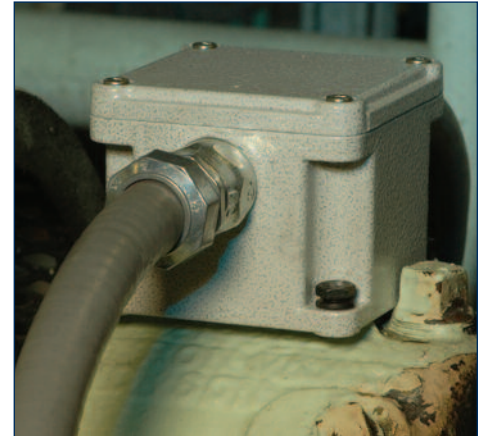
Enclosure Connection Ports

- 0** Two ports with cord grips
- 1** Two ports with 1/2" NPT conduit hubs
- 2** One port with cord grip
- 3** One port with 1/2" NPT conduit hub
- 4** Two 1/2" NPT ports **must select C1 enclosure type
- 5** Two ports, cord grip left, conduit right
- 6** Two ports, cord grip right, conduit left

Example

685B 0 0 0 1 A1 1 Electronic vibration switch with built-in sensor, CSA class 1 div 2 approved, 0 to 1.5 in/sec peak velocity range 85 to 245 VAC powered two Form C SPDT relays with 0-45 sec adjustable time delays, standard NEMA 4X enclosure with two 1/2" NPT conduit hubs

Selections in red are not available with CSA class 1 div 2 hazardous area approval
 CSA class 1 div 2 approval supplied standard for switches were all options are black



**Full Featured Model 685B
 Electronic Vibration Switch**

When a full featured electronic vibration switch is required that includes dual set points (relays), 4-20 mA overall vibration output, or the raw vibration signal output for doing vibration analysis, select an IMI Series 685B Electronic Vibration Switch. It is lower cost and a direct replacement form many of our competitors models



**Model 080A209
 Adapter Plate**



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 electro-mechanical 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 of the absence of vibration, such as when a conveyer ceases to function due to a broken drive belt.

Vibration switches offered by IMI Sensors

Highlighted in this brochure are two common categories of vibration switches – electronic and mechanical. In general, electronic vibration switches offer more precision & reliability than mechanical switches.

The amplitude of the electrical signal generated by the sensor is proportional to the experienced vibration. Circuitry within the switch compares this signal amplitude against a predetermined threshold value.

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.



Series 686B: Electronic, universal power, single switch

This revolutionary two-wire electronic switch offers the simplicity of a mechanical switch with the precision of an electronic switch. The unit operates from universal power that is scavenged from a load's power source. It is microprocessor controlled, has a built-in piezoelectric accelerometer, installs easily with a single stud, and has the smallest footprint of any vibration switch on the market.



Series 685B: Electronic, AC or DC power, dual switches

This precision electronic vibration switch is AC or DC powered, utilizes an on-board or remote accelerometer, provides two relay or triac outputs, generates a 4-20 mA vibration output signal, and offers an analog vibration signal for FFT analysis and fault diagnostics.



Series 685A07: Electronic, DC power, single switch

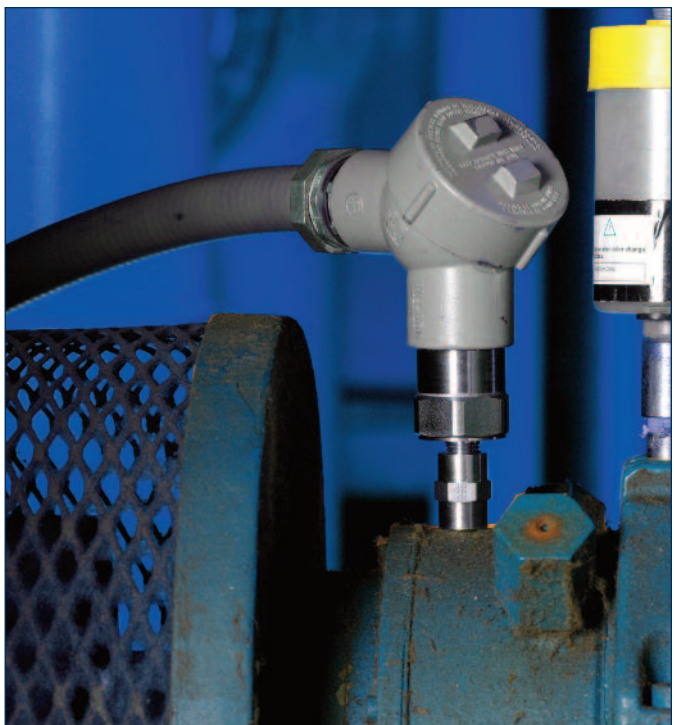
This general-purpose electronic vibration switch is DC powered, utilizes an on-board accelerometer, and offers a single, 5-amp, Form C relay output.

Mechanical switches do not require power and utilize the resistive force and travel of a spring as a measure of vibration amplitude. When the travel of a spring exceeds the predetermined threshold, the switch is actuated and latched by magnetic attraction. The threshold value is adjustable by changing the proximity of the magnet to the spring and hence the spring travel required for actuation. Switch reset is accomplished manually by disengaging the magnet from the spring.



Series 685: Mechanical, single switch

This mechanical vibration switch is available in either in a NEMA 4 (IP66) or explosion proof housing, and offers a single, 5-amp, Form C relay output.



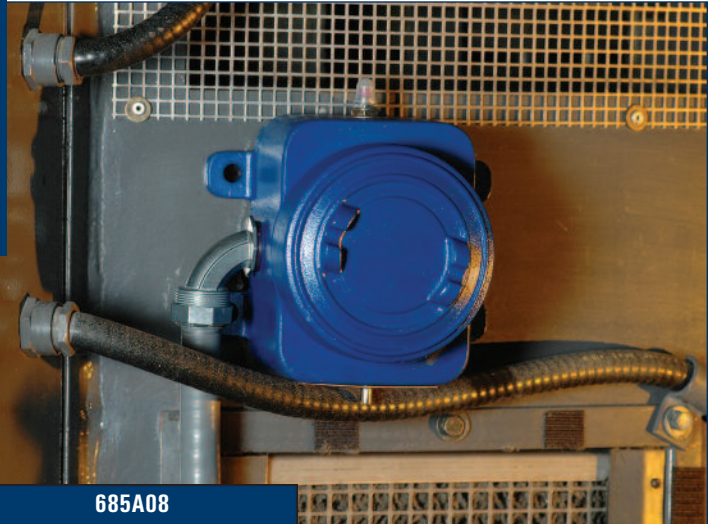


About Mechanical Vibration Switches

For machines requiring simplified contact closure protection, Models 685A07 and 685A08 offer 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 an external reset switch for ease of operation.

Mechanical Vibration Switches

- Offers cost effective protection for less critical situations
- Utilizes spring-loaded, magnetically coupled sensor
- Provides single set point electromechanical relay
- Requires no power
- Weatherproof and explosion proof versions



Specifications

Models	685A07		685A08	
	English	SI	English	SISI
Performance				
Vibration Range (FS) pk	0 to 7 g	0 to 68.7 m/s ²	0 to 7 g	0 to 68.7 m/s ²
Frequency Range	120 to 60k cpm	0 to 100 Hz	0 to 6000 cpm	0 to 100 Hz
Threshold Set Point (single alarm)	10 to 100% FS		10 to 100% FS	
Relay Action	latching		latching	
Environmental				
Operating Temperature Range	-40 to +140 °F	-40 to +60 °C	-40 to +140 °F	-40 to +60 °C
Enclosure Rating	NEMA 4X	IP66	NEMA 7 explosion proof	
Hazardous Area Approval*	N/A		class 1, div 1, groups C and D	
Electrical				
Power Required	none		none	
Sensor Type (built-in)	spring loaded magnet		spring loaded magnet	
Relay Type	Form C, electromechanical relay		Form C, electromechanical relay	
Switch Contact Capacity	5 Amp, 480 VAC	2 Amp, 30 VDC	5 Amp, 480 VAC	2 Amp, 30 VDC
Physical				
Housing Material	aluminum alloy		aluminum alloy	
Electrical Connections	alarm		alarm	
Electrical Connectors	screw terminals		screw terminals	
Wire Size (screw terminals)	24 to 14 AWG	0.2 to 2.5 mm ²	24 to 14 AWG	0.2 to 2.5 mm ²
Enclosure Ports (1 place)	3/4-14 NPT		3/4-14 NPT	
Mounting Holes (4 places)	0.25 inch	6.4 mm	0.375 inch	10 mm
Size (w x h x d)	4.35x3.30x4.35 inch	110.5x83.8x110.5 mm	6.375x4.875x5.625inch	162x124x143 mm
Weight	2.1 lb	953 gm	5.5 lb	2200 gm
Indicators/Controls				
Alarm Set Point Adjustment	control screw		control screw	
Reset Function	push button switch		push button switch	



Model 685A07



Model 685A08



Vibration Switches

Reliability Starts With IMI Sensors: Your Complete Vibration Monitoring Source!

Predictive Maintenance

Industrial ICP® Accelerometers:

- 10 mV/g, 100 mV/g, and 500 mV/g sensitivities
- Integral, armored, & submersible cable options
- Hazardous area approved versions available
- Low-Cost ■ Low Frequency ■ High Temp
- Precision ■ High Frequency ■ Multi-Axis



Process Control & Protection

- 4-20 mA Industrial Vibration Sensors & Transmitters
- 4-20 mA USB programmable Smart Sensors
- 4-20 mA DIN Rail Modules
- Embeddable Accelerometers
- Alarm modules & Enclosures



Energy & Power Generation

- Wind Turbine Monitoring & maintenance
- Gas Pipeline - Pumps & Motors
- Pressure Sensors for Natural Gas/Petrochemical
- Pressure Sensors for Gas Turbine Monitoring
- Accelerometer for Gas Turbine Monitoring



Accessories

- Cables & Connectors
- Enclosures
- Mounting Hardware
- Specialty Products
- Calibration Services



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ISO 9001 CERTIFIED ■ A2LA ACCREDITED to ISO 17025

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