



SERIES 686

SMART VIBRATION SWITCH



- Field-programmable with use of PC for precise setting of vibration threshold and other parameters.
- Customizable time delays prevent false trips from errant vibration spikes during start-up and operation.
- Measurement range in velocity provides more effective monitoring for equipment with low running speeds.
- Magnetically-Adjustable Vibration Threshold (MAVT™) feature allows for field modification of vibration threshold without in-depth knowledge about equipment's actual vibration levels.
- Small footprint and accelerometer-style housing facilitate mounting in tight installation applications.

The Smart Vibration Switch is USB programmable with two wire operation, universal power and a single stud mount. The product has an embedded precision accelerometer, a solid state relay and adjustable time delays to provide accurate, repeatable results. Smart Switches monitor vibration in velocity and are in a robust stainless steel housing that is hermetically-sealed for use in the harshest environments.

TYPICAL APPLICATIONS

- Cooling Towers
- Air-Cooled Heat Exchangers
- Evaporative/Steam Condensers
- Air-Cooled Chillers

CE SB Ex IECEx



SPECIFICATIONS	
Performance	
Alarm Threshold Level	0.25 to 5.0 in/sec pk 6.35 to 127.00 mm/sec pk
Frequency Range (± 3 dB)	686B Series: 420 to 60000 cpm 7 to 1000 Hz 686C Series: 120 to 60000 cpm 2 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
MAVTTm	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)	5,000 g pk 49,050 m/s ² pk
Humidity Range (Condensing)	0 to 100%
Electrical Isolation (Case)	>108 ohms
Physical	
Sensing Element (Internal)	Piezoelectric Accelerometer
Power On Delay	Stainless Steel
Startup Delay (Active)	Welded Hermetic
Startup Delay (Time)	1/4" NPT Male ([EX]686B7X[D]) 1/4"-28 Female (All Other Models)
Startup Delay (x Alarm Threshold)	2 to 5 ft-lb 2.7 to 6.8 N-m
Operational (Alarm) Delay	2-Pin MIL Conn (686C0X & [EX]686B0X) Integral Cable ([EX]686B1X) Integral Armored Cable ([EX]686B6X) Terminal Block ([EX]686B7X[D])
Relay Type	Top

USB PROGRAMMER KIT

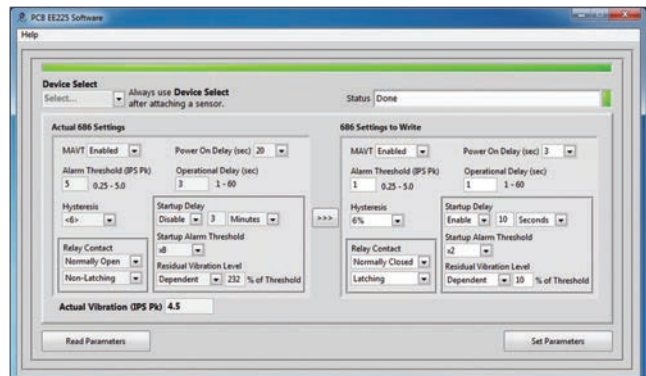
The Smart Vibration Switch is fully user programmable using the optional Model 600A29 USB Switch Programmer Kit. This kit can be used in conjunction with any PC to read or reprogram the settings of the Smart Vibration Switch. The user can enable/disable and set the following switch parameters.

USB SWITCH PROGRAMMER KIT CONTENTS

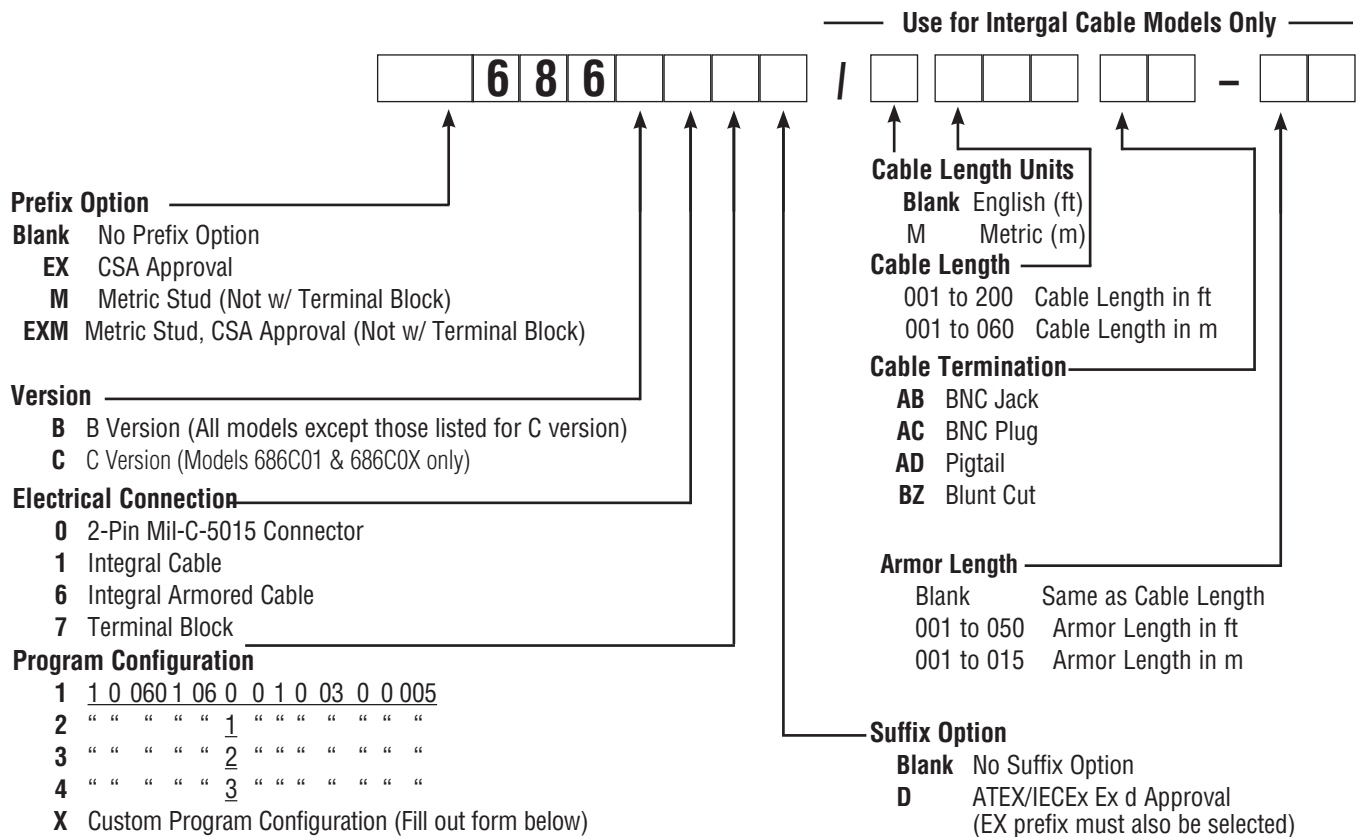
070A100 - Programming Cable
EE225 - USB Software
042M17 - Terminal Block / Integral Cable Adapter
080A214 - Magnetic Clip



Model 080A214 Magnetic Clip



SWITCH MODEL NUMBER TEMPLATE



CUSTOM PROGRAM CONFIGURATION

MAVT™

A

0	Disabled
1	Enabled

Alarm Threshold

B

0	English
1	Metric

C

Value = 0.25 to 5.00 ips pk
04.5 to 90.0 mm/sec pk

e.g.: 0.25 ips =

0	2	5
---	---	---

25.4 mm/sec =

2	5	4
---	---	---

Hysteresis

D

0	3%
1	6%
2	10%

Operational Delay

E

Value = 01 to 60 sec

Relay Contact

F

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

Power On Delay

G

0	3 sec
1	20 sec

Startup Delay

H

0	Disabled
1	Enabled

I

0	Seconds
1	Minutes

J

Value = 01 to 60 sec. or
01 to 30 min.

Alarm Threshold During Startup
(Multiplier of the Alarm Threshold)

K

0	x2
1	x4
2	x8
3	Blocked

Residual Vibration Level

L

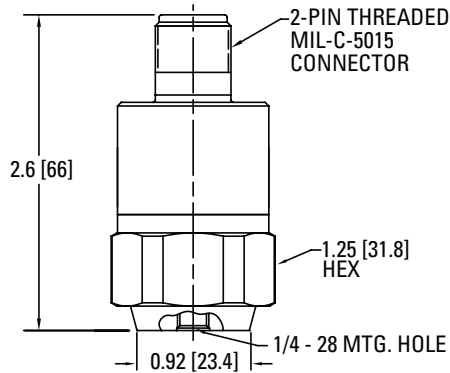
0	Dependent
1	Independent

M

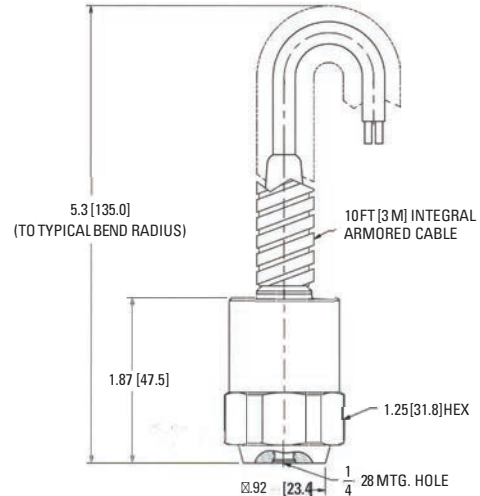
Value = For **Dependent** 001 to 040% of Alarm Threshold.
For **Independent** 0.01 to 5.00 ips
00.1 to 90.0 mm/sec

TECHNICAL DRAWINGS

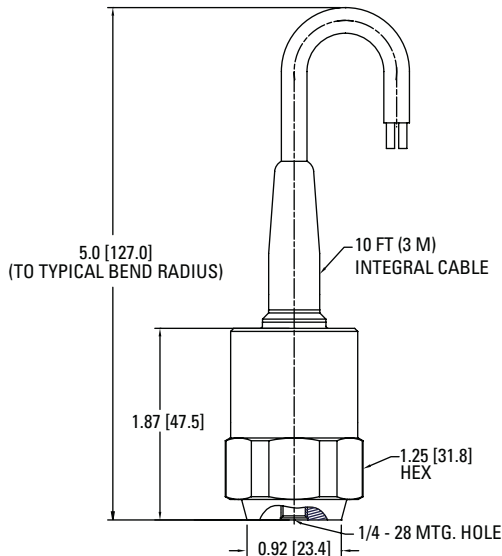
Models 686C0X & (EX)686B0X



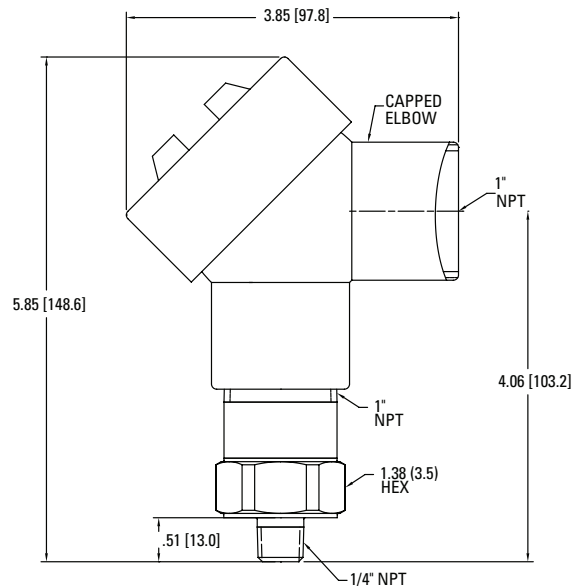
Models (EX)686B6X



Models (EX)686B1X



Models (EX)686B7X(D)



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IMI Sensors, a division of PCB Piezotronics, Inc. manufactures industrial vibration monitoring instrumentation, such as accelerometers, vibration transmitters and switches that feature rugged stainless steel housings and survive in harsh environments like paper and steel mills, mines, gas turbines, water treatment facilities and power plants. Integrating with portable analyzers and PLC's, IMI instrumentation helps maintenance departments reduce downtime and protect critical machinery. Visit IMI Sensors at www.pcb.com. PCB Piezotronics, Inc. is a wholly owned subsidiary of MTS Systems Corporation. Additional information on MTS can be found at www.mts.com.

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IMI-SmartSwitch-0819



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