



PT500 Electro-Mechanical Vibration Switch



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PVTVM-PT500-CATALOG-E-A-5



PT500 Electro-Mechanical Vibration Switch Introduction

The PT500 is an economical solution to provide basic vibration protection for your rotating or reciprocating machines. The PT500 uses an inertia sensitive mechanism which actuates internal micro-switch contacts when the vibration level exceeds the adjustable set point. The PT 500 start-up delay feature prevents the switch from activating during the higher vibration levels present during the start-up of the machine so that the set point may be adjusted closer to the vibration levels present during normal operation or running speed of the machine.

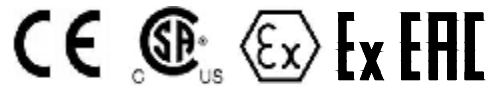
The PT500 is your “one stop shopping” for all electro-mechanical vibration switch applications. The unique design has all industry required environmental and hazardous area approvals. The E-coat option is suitable for offshore and very corrosive environmental applications. Universal mounting plate will mount in existing mounting holes when replacing older mechanical vibration switches.

Applications include:

- ü Fans
- ü Cooling Motor/Fans
- ü Fin Fans
- ü Heat Exchangers
- ü Engines
- ü Reciprocating Compressors
- ü Centrifuges
- ü Rock or Coal Crushers

PT500 Features

- ü Wide operating temperature range of -52°C – 100°C (-62°F – 212°F)
- ü All industry environmental ratings
- ü Optional NEMA(E-coat), IP65 environmental rating
- ü Hazardous area agency approvals CSA, ATEX, CE



- ü Universal mounting
- ü Local and remote reset
- ü Start up delay
- ü SPDT, (2) SPDT and gold plated contact options

Specification

Function: Armature mechanism trips on high vibration and operates snap action switch.

Vibration Range: See How to Select “C”

Frequency Range: 0 to 3600 rpm

Set Point Adjust: 0 to 100% of range. Internal set point adjustment.

Local Reset: For field local reset of the switch

Remote reset with Start-up Delay: Applying reset coil voltage at start up holds mechanism from tripping delay about 3 seconds, after which the switch is automatically activated.

Reset Coil Power Supply:

95 - 250VAC@100mA, 50 - 60Hz or

20 - 30VDC @ 200mA

Temperature Limit: -52 °C to +100 °C

Enclosure: Casted Aluminum

Coating: Standard plastic coating on outside of surface, or E-coating for optional on both inside and outside of surfaces and mounting plate (AL alloy).

Mounting stud and local reset are SS304.

Environmental Rating: IP65



PT500 Electro-Mechanical Vibration Switches

Switch Contact(s) Rating:

15A, 125VAC, 250VAC, 480VAC; 1/8 HP 125VAC
1/4 HP 250VAC; 1/2A, 125VDC; 1/4A, 250VDC;
1.5A, 8VDC, 14VDC, 30VDC;
Gold plated contact: 0.1A 125VAC; 0.1A 30VDC

Storage:

The PT500 switches must be stored in a dry area when not installed. Don't move the conduit plug away which can protect the hole thread from damages during the storage and shipping/handling.

Hazard Rating: See order information

IECEX: Ex db IIC T4/T6 Gb
Ex db IIB+H2 T4/T6 Gb
IECEX DEK 16.0002X

IEC 60079-0: 2017
IEC 60079-1: 2014

ATEX: II 2G Ex db IIC T4/T6 Gb
II 2G Ex db IIB+H2 T4/T6 Gb
T4@Ta= -52°C to +100°C
T6@Ta= -52°C to +68°C
DEKRA 16ATEX0003X

EN 60079-0: 2018
EN 60079-1: 2014

TR CU : 1Ex db IIC T4, T6X Gb
1Ex db IIB+H2T4, T6 X Gb
№ TC RU C-US.AA87.B.01024
NANIO CCVE

GOST 31610.0-2014 (IEC 60079-0: 2011) Explosive atmospheres. Part 0. Equipment. General requirements and GOST IEC 60079-1-2013 Explosive media. Part 1. Equipment with type of protection "flameproof enclosure" d".

Contact the manufacturer for the dimensions of the flameproof joints.

Physical

Temperature

Operation: -52°C - + 100°C (-62°F - +212°F)
Storage: -52°C - + 120°C (-62°F - +248°F)

Dimension

See attached drawing

Weight

PT500	1285g (2.8 lbs)
PT500-13	205g (0.45 lbs)
PT500-14	279g (0.6 lbs)
PT500-15(PT500-17)	440g (0.97 lbs)
PT500-20	112g (0.25 lbs)

Order Information

PT500-ABC-DE*

A: Hazardous Area Approvals

A = 0: CE Mark

A = 1: Multiple Approvals (D=0, 1)

CSA: Class I, Div 1, Groups B, C & D T4, T6

CERTIFICATE: 2079756

ATEX: II 2G Ex db IIB+H2 T4/T6 Gb

T4@Ta= -52°C to +100°C

T6@Ta= -52°C to +68°C

DEKRA 16ATEX0003X

IECEX: Ex db IIB+H2 T4/T6 Gb

IECEX DEK 16.0002X

PCEC: Ex d II B+ H2T4/T6 Gb

CE Mark

A = 5: Multiple Approvals (D=5)

CSA: Class I, Div 1, Groups A, B, C & D, T4, T6

CERTIFICATE: 2079756

ATEX: II 2G Ex db IIC T4/T6 Gb

T4@Ta= -52°C to +100°C

T6@Ta= -52°C to +68°C

DEKRA 16ATEX0003X

IECEX: Ex db IIC T4/T6 Gb

IECEX DEK 16.0002X

PCEC: Ex d II C T4/T6 Gb

CE Mark

A = 6: Multiple approvals (D=0, 1):

TR CU: 1Ex db IIB+H2T4, T6 X Gb

CE Mark

A = 7: Multiple approvals (D=5):

TR CU: 1Ex db IIC T4, T6 X Gb

CE Mark

B: Relay Contact

B = 1: SPDT

B = 2: (2) SPDT

B = 3: SPDT (gold plated contact)

B = 4: (2) SPDT (gold plated contact)

C: Full Scale

C = 1: 5g

C = 2: 2g

C = 3: 10g

D: Reset Power with Start-up Inhibit; Local Reset

D = 0: Local Reset only

D = 1: Remote Reset and Inhibit; Local Reset

D = 5: Remote Reset and Inhibit; No Local Reset

E: Conduit Entries/Mounting Plate or Mounting Stud

E = 1: 3/4" NPT, Mounting Plate PT500-13

E = 2: 3/4" NPT, Mounting Plate PT500-14

E = 4: M20×1.5, Mounting Plate PT500-14

E = 5: M20×1.5, Mounting Plate PT500-13



PT500 Electro-Mechanical Vibration Switches

E = 6: 3/4" NPT, Mounting Stud 3/4" NPT

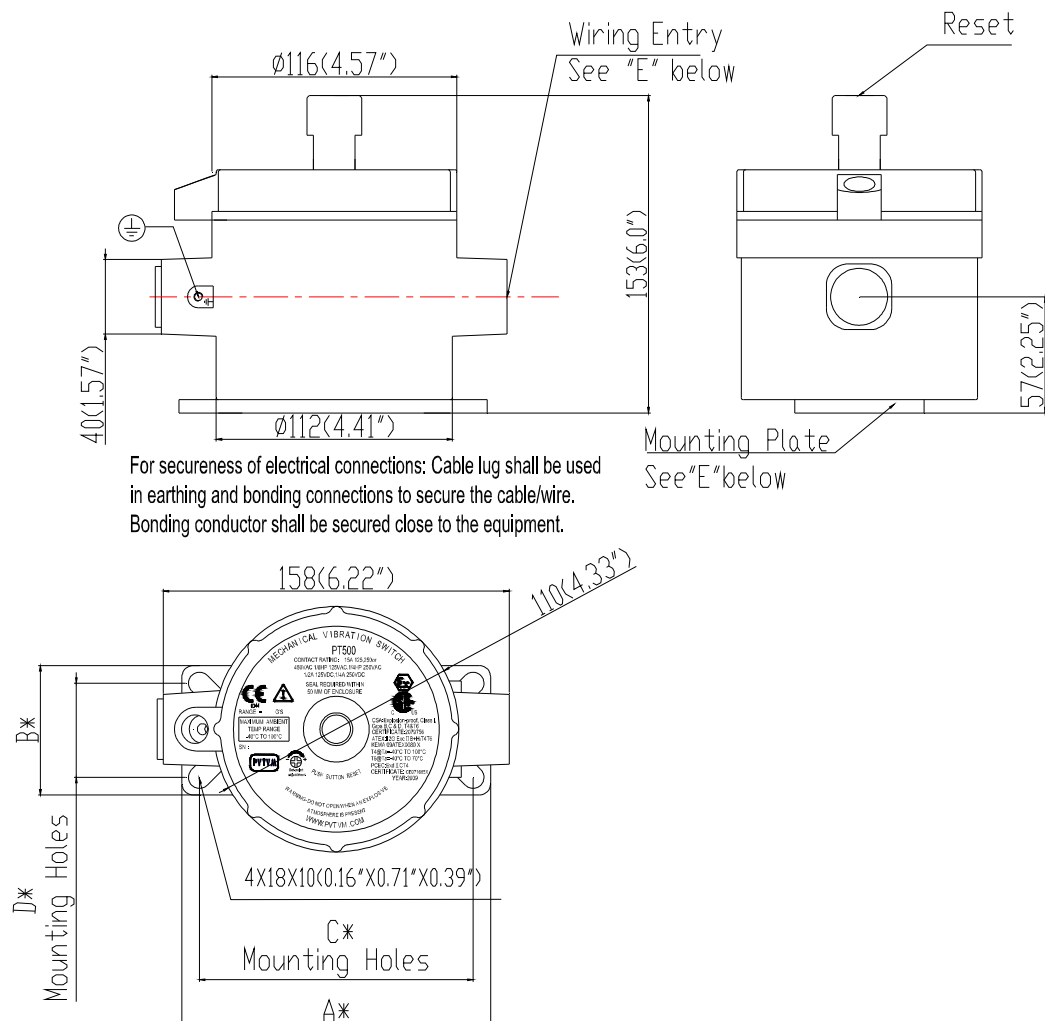
E = 7: M20×1.5, Mounting Stud M20×1.5

Note:

* If E-coating is required, add the suffix "E" at the end of part number. For example: PT500-122-15E.

* When the option with Hazardous Area Approvals is selected, cable glands, blanking elements and conduit seals shall be ATEX and IECEx Ex d certified and suitable for the application (e.g. temperature range). The cable gland and cable shall be suitable for 85°C for T6 and 115°C for T4 based on result of temperature test.

Mechanical Outline Drawings





Installation - Field-wiring Diagram

Switches

Each switch is SPDT. There are three pin out:

COM:

Common.

NC:

Normally Closed. It is normally connected with the COM. In alarm status, it is dis-connected from COM.

NO:

Normally Open. It is normally dis-connected with the COM. In alarm status, it is connected from COM.

Installation – Protecting Against Moisture Ingression

The operations mentioned below are particularly important and highly recommended for moist environments where the switch will be mounted. Such as cooling tower structure, evaporative fans, marine applications, or the place where the switch has to be exposed in rain, extreme humidity which can form condensation at or in the switch , conduit, or wiring through conduit.

1. Properly tighten the cover

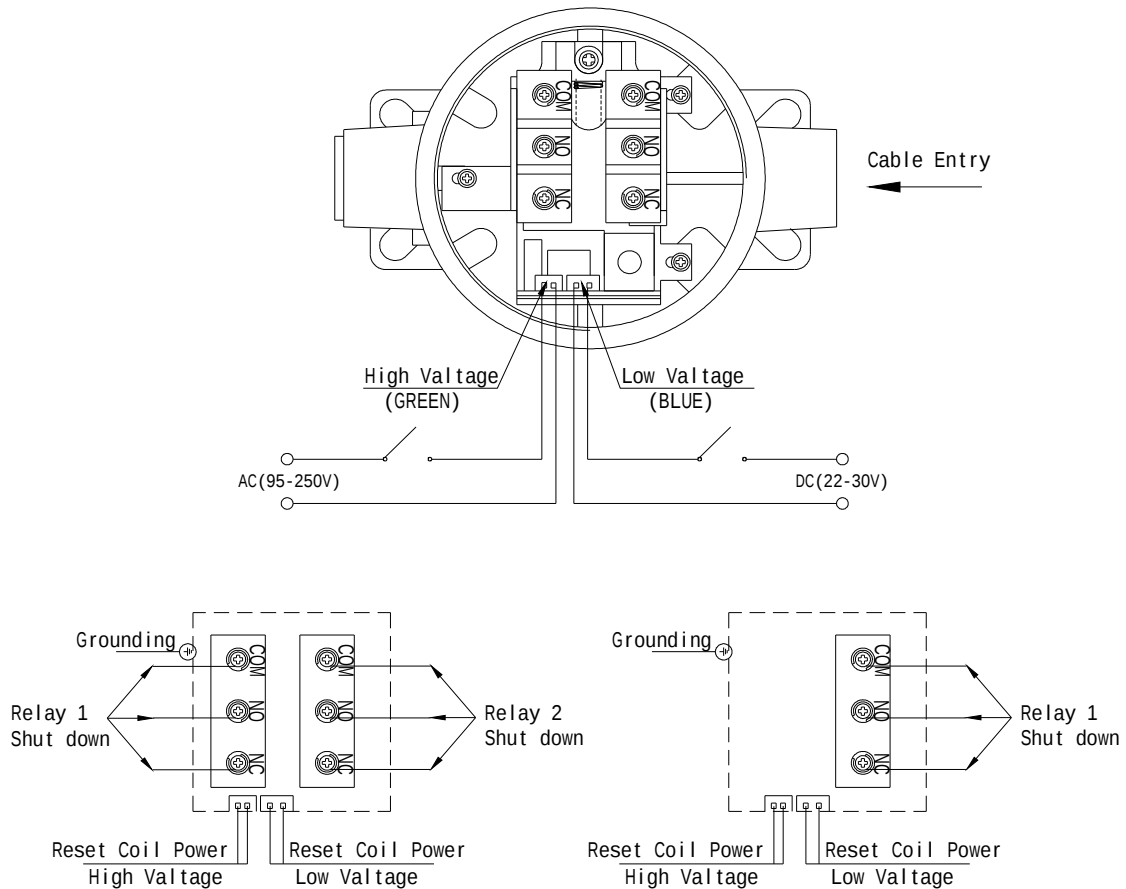
It is necessary to tighten the cover in order to prevent dust or moisture ingress into the switch and also important for hazardous area against ignition of a flammable atmosphere.

2. Examine Cable Insulation for Nicks and Cuts and Use Appropriate Conduit Gland

It is important to examine cable insulation for nicks and cuts to ensure the cable in good rated condition as it is a potential risk that moist can ingress into the cable via nicks and cuts and eventually into switch. In addition, an appropriate waterproof conduit gland is needed.

Remote reset with start-up inhibit

Two sets of power supply can be used for this function.



For the ordering code B=2 or 4 , D=1 or 5

For the ordering code B=1 or 3 , D=1 or 5

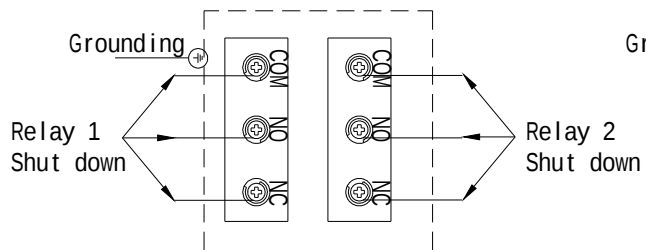
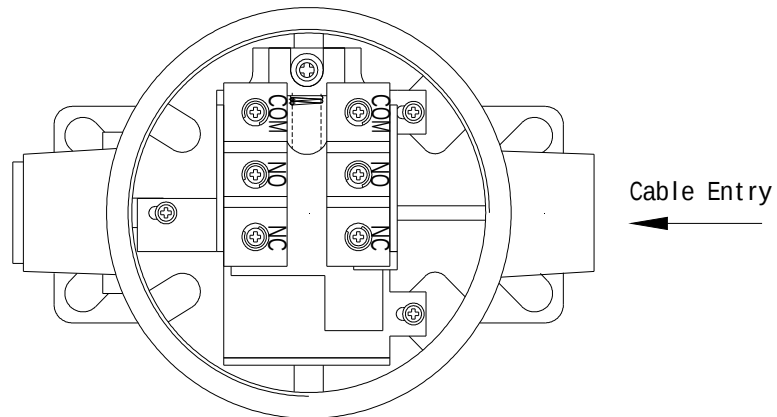
High Voltage(95 ~ 250VAC@100mA, 50~60Hz or 95 ~ 120VDC@100mA): Connect to high voltage pins. No polarity.

Low Voltage(20 ~ 30VDC@200mA): Connect to low voltage pins. No polarity.

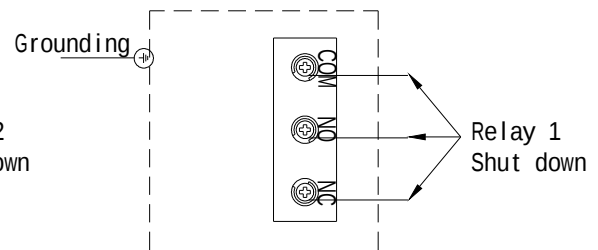
Caution:

Never connect the high voltage power into low voltage connectors. It will destroy the reset circuit!

Local reset only



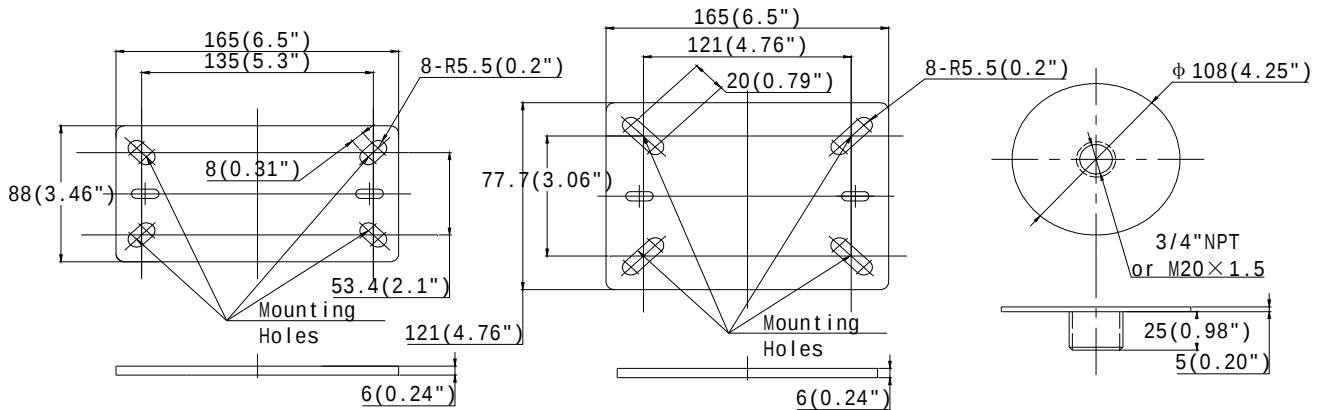
For the ordering code B=2 or 4 , D=0



For the ordering code B=1 or 3 , D=0

Accessories

Mounting Plate and mounting studs:



All dimensions in mm (inches)

PT500-13

PT500-14

PT500-15 (3/4" NPT)
PT500-17 (M20x1.5)



**3/4" NPT seal
with CSA
PT500-18**



**3/4" NPT cable feedthrough
with CSA
PT500-19**



**Blank cover
PT500-3**



**Remote reset circuit
PT500-20**