



### TM016 Velocity/ Acceleration Vibration Transmitter

#### Introduction

The TM016 is a solid state loop powered transmitter which provides a 4-20mA output proportional to the machine case vibration level. The 4-20mA output interfaces directly to any PLC or DCS for shutdown, alarm or trending. The TM016 is easy to install on the machine case.

Applications include:

- ✓ **Motors**
- ✓ **Pumps**
- ✓ **Fans**
- ✓ **Blowers**
- ✓ **Engines**
- ✓ **Compressors**
- ✓ **Centrifuges**
- ✓ **Generators**
- ✓ **Turbochargers**
- ✓ **Gear Boxes**



TM016-D0, D1

#### Features

- ✓ Loop powered 4-20mA velocity or acceleration (peak or RMS) output
- ✓ Wide operating temperature range -40°C to +120°C (-40°F to +248°F)
- ✓ Stainless steel housing
- ✓ NEMA4X, IP65 or IP67 environmental rating
- ✓ Multiple hazardous area approvals
- ✓ Frequency filter options
- ✓ Wide selection of mounting studs



TM016-D4



### Electrical

#### Overall vibration output:

4-20mA, load (loop powered)

Accuracy: 4%

#### Frequency response ( $\pm 3$ db):

Acceleration: 2~3,000 Hz

Velocity: 2~3,000 Hz

#### Transverse sensitivity:

< 5%

#### Power supply:

12VDC - 30VDC

#### Maximum load resistance:

At least 500 ohms @ 24VDC power supply

#### Isolation:

500Vrms, circuit to case

#### Case material:

Stainless steel

#### Output connection:

##### Flying leads:

2 cables for 4-20mA

2 cables for buffered output

##### Mil connector:

2 pins for 4-20mA

#### Buffered output:

100mV/g nominal

Maximum cable length 3m (10ft)

#### Filter option:

12dB/oct for hi-pass filter

12dB/oct for low-pass filter

### Physical

#### Temperature:

##### Operation:

Normal (G=0): -40°C to + 100°C (-40°F to +212°F)

High (G=1): -40°C to + 120°C (-40°F to +248°F)

Storage: -50°C to + 125°C (-58°F to +257°F)

##### Dimensions:

Diameter: 38mm (1.5")

Height: Flying leads: 78mm (3.1");

Mil connectors: 87mm (3.4")

##### Weight:

240g (0.5lb)

##### Output Connections:

2-pin MIL-C-5015

Flying leads: 2 or 4 wires (Default lead length is 1m.

When working with TM016-01, TM016-11 or TM016-02, the lead length is 20cm)

1 NPT

##### Environmental:

Flying leads: NEMA 4X, IP65

2-pin connector: IP67



## Order Information

\* Factory default

### TM016-AAA-BCD-EF-G

#### AAA: Full Scale

AAA=000: 20mm/s (0.8ips), pk  
AAA=001: 20mm/s (0.8ips), rms  
AAA=121: 25mm/s (1.0ips), pk  
AAA=122: 12.5mm/s (0.5ips), pk  
AAA=123: 50mm/s (2.0ips), pk  
AAA=124: 125mm/s (5.0ips), pk  
AAA=132: 75mm/s (3.0ips), pk  
AAA=151: 25mm/s (1.0ips), rms  
AAA=152: 12.5mm/s (0.5ips), rms  
AAA=153: 50mm/s (2.0ips), rms  
AAA=154: 125mm/s (5.0ips), rms  
AAA=162: 75mm/s (3.0ips), rms  
AAA=200: 5.0g, pk  
AAA=201: 10g, pk  
AAA=202: 20g, pk

#### B: Mounting Adaptor

B=0: 1/4" NPT  
B=1: 1/2" NPT  
B=2: 3/8-24UNF X 1/2"  
B=3: 1/2-20UNF X 1/2"  
B=4: M8x1-12  
B=5: M10x1.25-12

#### C: Hazardous Area and Approvals

C=1: CE  
C=2\*: CE Explosion Proof Approval (D=0, 1)  
CSA: Class I, Div. 1, Groups A, B, C & D  
Class II, Div. 1, Groups E, F, G &  
T4@Ta=-40°C to+120°C  
ATEX: II 2G, Ex d IIC T4@Ta=-40°C to+120°C  
KEMA06ATEX0275  
PCEC: Ex d IIC T4  
C=3: CE Intrinsically Safe Approval  
ATEX: II 1G Ex ia IIC T4@Ta=-40°C to+100°C  
KEMA06ATEX0228  
GOST R: 0Ex ia IIC T4X  
PCEC: Ex ia IIC T4

#### D: Connection

D=0: 4-20mA, flying leads (C1 or C2)  
D=1: 4-20mA, flying leads with buffered output (C1 or C2)  
D=4: 4-20mA, 2-PIN MIL connector (C1 or C3)

#### E: High-pass Filter

E=0: None  
E=1: 5Hz  
E=2: 10Hz  
E=3: 20Hz  
E=4: 50Hz  
E=5: 100Hz  
E=6: 200Hz

#### F: Low-pass Filter

F=0: none  
F=1: 500Hz  
F=2: 1000Hz  
F=3: 2000Hz

#### G: Temperature

G=0: Normal temperature (-40°C to + 100°C)  
G=1: High temperature (-40°C to + 120°C)

### TM016-K1

Vibration transmitter kit includes:

TM016-D0 or -D1 with TM016-02

CE mark

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

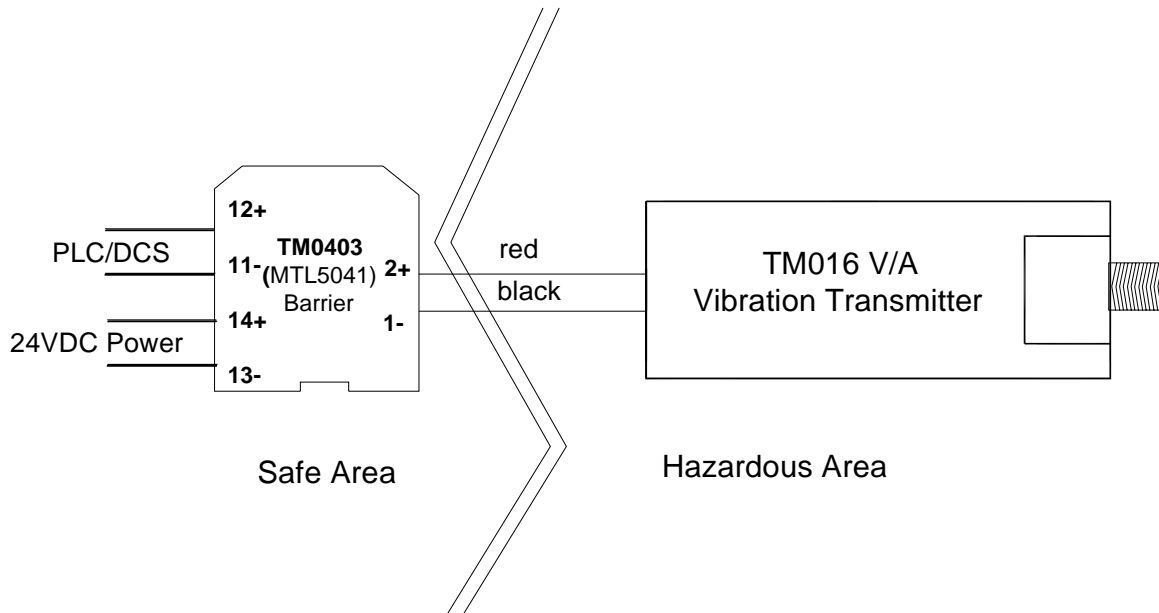
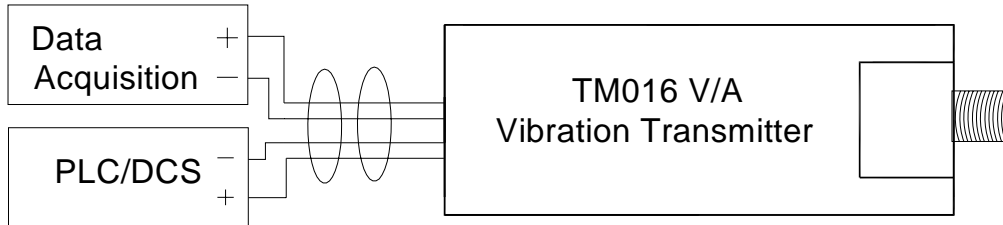
Class II, Div. 1, Groups E, F, G & T4

ATEX: II 2G, Ex dIIC T4 @Ta=-40°C to+120°C

KEMA06ATEX0275



**Field-Wiring Diagram**



Note:

Other Barriers:

TM0404: (MTL 5042)

TM0406: (STAHL 9303/11-22-11)

TM0407: (STAHL 9160/13-11-11)



**Accessories**

(Standard cable length is 5 meters. XX = 05)



**TM0702-XX:** Aluminum MIL connector with XX meters cable, 6.35mm diameter.  
< 120°C (250°F)



**TM0703-XX:** Sealed tight boot connector with XX meters cable, 6.35mm diameter.  
< 120°C (250°F)



**TM0704-XX:** Stainless steel MIL connector with Armored XX meters cable,  
4.83mm diameter. < 150°C (300°F)



**TM0705-XX:** Cornered MIL connector with XX meters cable, 6.35mm diameter.  
< 120°C (250°F)



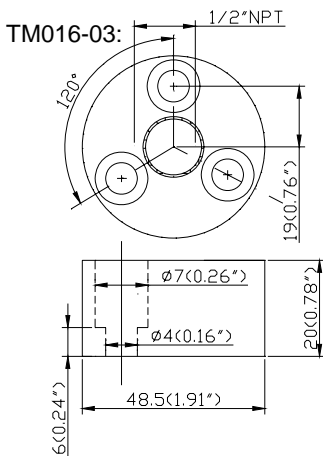
**TM016-01:** Aluminum conduit elbow & reducer. 1" to 3/4" NPT

**TM016-11:** Aluminum conduit elbow & reducer with terminal block. 1" to 3/4" NPT  
Class I, Div. 1, Groups B, C & D; Class II, Div. 1, Groups E, F & G and NEMA 4X, IP65



**TM016-02:** Stainless steel conduit elbow with terminal block. 1" to 3/4" NPT  
Class I, Div. 1, Groups A, B, C, D & T4; Class II, Div. 1, Groups E, F & G and NEMA 4X,  
IP65 (works with TM016)

**TM016-03:** Stainless steel flange mounting adaptor with 1/2" NPT mount; 3 holes of 7mm  
on the circle of 38mm (1.5") in diameter



**TM900:** Power converter

**TM0200:** 3-1/2 digit display unit