

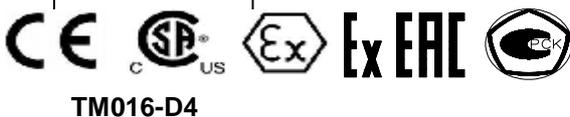
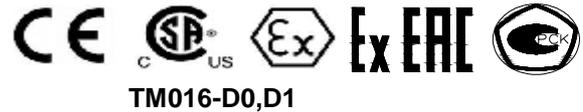
TM016 Velocity/ Acceleration Vibration Transmitter

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 :

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



Features

- ü Loop powered 4-20mA velocity or acceleration (peak or RMS) output
- ü Wide operating temperature range -50°C to +120°C (-58°F to +248°F)
- ü Stainless steel housing
- ü NEMA4X, IP65 or IP67 environmental rating
- ü Multiple hazardous area approvals
- ü Frequency filter options
- ü Wide selection of mounting studs



Electrical

Overall vibration output:

4-20mA, load (loop powered)

Accuracy: 5%

Frequency response ($\pm 3\text{db}$):

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:

316L 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

Intrinsically Safe:

ATEX:II 1G Ex ia IIC T4 Ga@Ta=-50°C to+100°C

(Ui=30V,Li=110mA,Pi=825mW,Ci=11nF,Li=84uH)

KEMA06ATEX0228

EN60079-0:2012+A11:2013,EN60079-11:2012

IECEX:EX ia IIC T4 Ga

IECEX DEK13.0021

IEC60079-0:2011,Ed.6,IEC60079-11:2011,Ed.6.

TR CU: 0Ex ia IIC T4 Ga X

№ TC RU C-US. AA87.B.01245

ГОСТ 31610.0-2014 (IEC 60079-0:2011)

ГОСТ 31610.11-2014 (IEC 60079-11:2011)

Ex d Standards:

ATEX: II 2G Ex db IIC T4 Gb@Ta=-40°C to+120°C

KEMA06ATEX0275

ATEX: EN60079-0:2012+A11:2013, EN60079-1:2007

IECEX: Ex db IIC T4 Gb

IECEX DEK13.0073

IECEX: IEC60079-0: 2011, IEC 60079-1:2007-04

Physical

Temperature:

Operation:

Normal (G=0): -50°C ~ + 100°C (-58°F ~ +212°F)

High (G=1): -50°C ~ + 120°C (-58°F ~ +248°F)

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

Dimensions:

Diameter: 38mm (1.5")

Height: Flying leads: 87mm (3.4");

Mil connectors: 87mm (3.4")

Weight:

420g (0.875lb)

Output Connections:

2-pin MIL-C-5015

Flying leads: 2 or 4 wires (Default lead length is 5m.

When working with 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

*Factory Recommendation:

TM016-AAA-BCD-12-0

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
- B=6: M10x1.5-12

C: Hazardous Area and Approvals

- C=1: CE
- C=2*: CE
 - CSA: Class I, Div. 1&2, Groups A, B, C & D
 - T4,Ta=-40°C to+100°C
 - Class I, Div. 2, Groups A, B, C & D
 - Class II, Groups E, F, & G
 - T4,Ta=-40°C to+120°C
 - ATEX: II 2G Ex db IIC T4 Gb@Ta=-40°C to+120°C
 - KEMA06ATEX0275
 - ATEX: II 1G Ex ia IIC T4 Ga @Ta=-50°C to+100°C
 - KEMA06ATEX0228
 - IECEX:Ex ia IIC T4 Ga
 - IECEX DEK13.0021
 - IECEX: Ex db IIC T4 Gb
 - IECEX DEK13.0073
 - TR CU: 0Ex ia IIC T4 Ga X
 - № TC RU C-US. AA87.B.01245
 - TR CU: 1Ex db IIC T4 Gb X
 - № TC RU C-US. AA87.B.01245

- C=3: CE
 - ATEX: II 1G Ex ia IIC T4 Ga@Ta=-50°C to+100°C
 - KEMA06ATEX0228
 - IECEX:Ex ia IIC T4 Ga
 - IECEX DEK13.0021
 - CSA:I.S.Class I,Div. 1&2,Groups A,B,C,D
 - TR CU: 0Ex ia IIC T4 Ga X

- C=4: CE
 - Non-Incendive
 - CSA:Class I,Div. 1&2,Groups A,B,C,D

D: Connection

- D=0: 4-20mA, flying leads
- D=1: 4-20mA, flying leads with buffered output
- D=4: 4-20mA, 2-PIN MIL connector (not for C2)

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 (-50°C to + 100°C)
- G=1: High temperature (-50°C to + 120°C)

TM016-K1

Vibration transmitter kit includes:

TM016-D0 or -D1 with TM016-02

CE mark

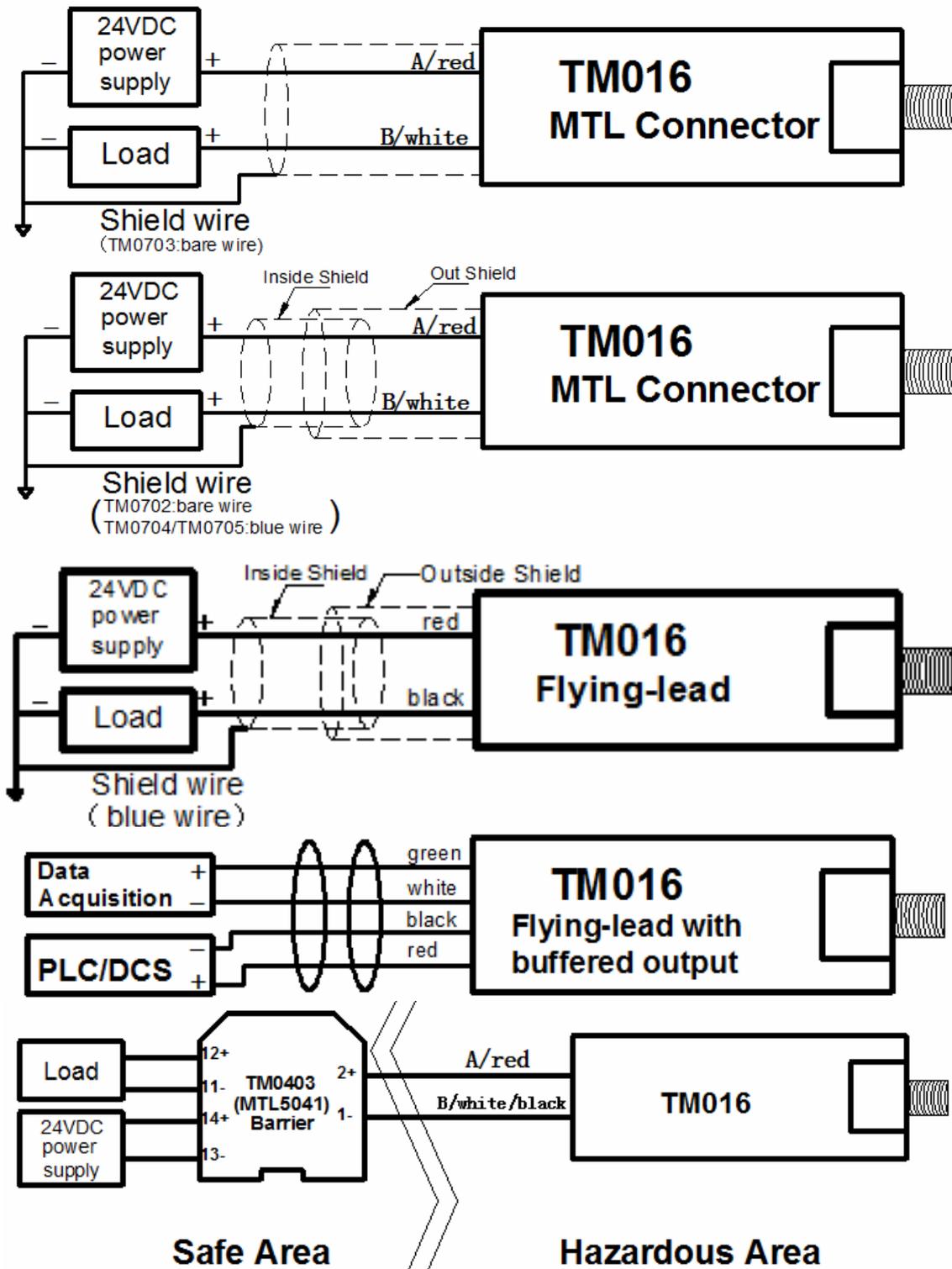
CSA: Class I, Div. 2, Groups A, B, C & D

Class II, Groups E, F, G & T4

ATEX: II 2G, Ex db IIC T4 Gb@Ta=-50°C to+120°C

KEMA06ATEX0275

Field-Wiring Diagram



Note:

Other Barriers:

TM0406: (STAHL 9160/13-11-10s)

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

Accessories

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



TM0702-XX: Aluminum MIL connector with XX meters cable, 7.5mm diameter.
Operating temperature range goes up to 120°C (250°F)



TM0703-XX: Sealed tight boot connector with XX meters cable, 6.3mm diameter.
Operating temperature range goes up to 120°C (250°F)



TM0704-XX: Stainless steel MIL connector with Armored XX meters cable, 7.0mm diameter. Operating temperature range goes up to 150°C (300°F), Maximum Length is 10 meters.



TM0704-XX-SS303: Stainless steel MIL connector (SS303 Stainless steel) with armored XX meters cable, 7mm diameter. Operating temperature range goes up to 150°C (300°F), Maximum Length is 10 meters.



TM0705-XX: Cornered MIL connector with XX meters cable, 7.0mm diameter.
Operating temperature range goes up to 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

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

TM016-11A: Aluminum conduit elbow & reducer with terminal block. 1" to 3/4" NPT

ATEX/IECEX:  II2 GD

Ex db IIC Gb

Ex tb IIIC Db IP65/IP66

CSA: Class I, Div. 1 & 2, Groups B, C, D

Class II, Div. 1 & 2, Groups E, F, G

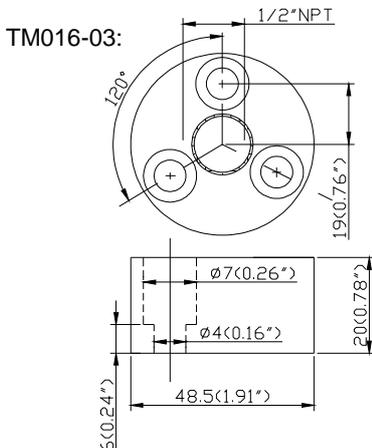
Class III



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



TM900A: Power converter

TM0200: 3-1/2 digit display unit



TM016-01(TM016-11)、TM016-01A (TM016-11A)

Dimension diagram (with TM016-D0 or D1)

