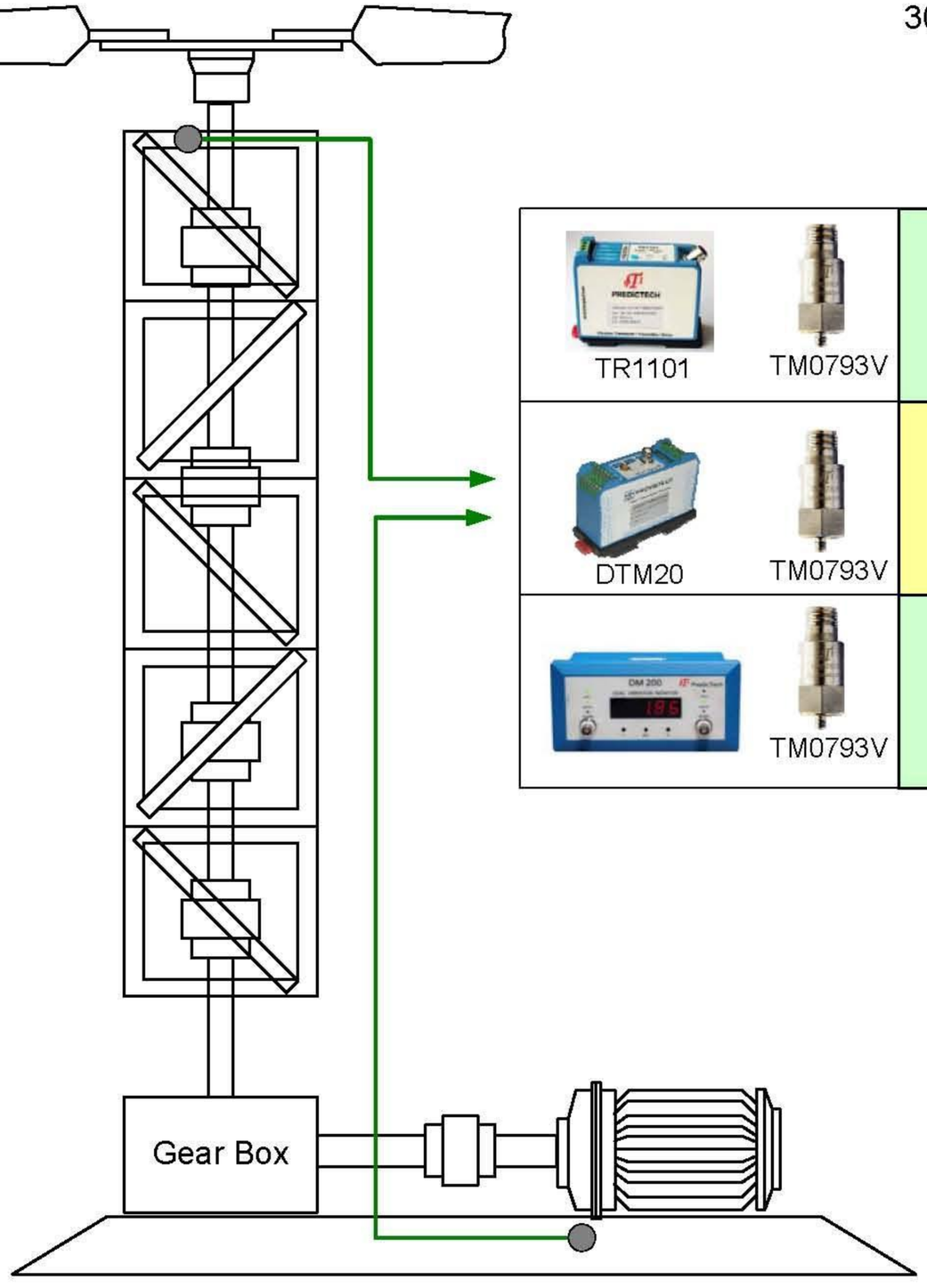
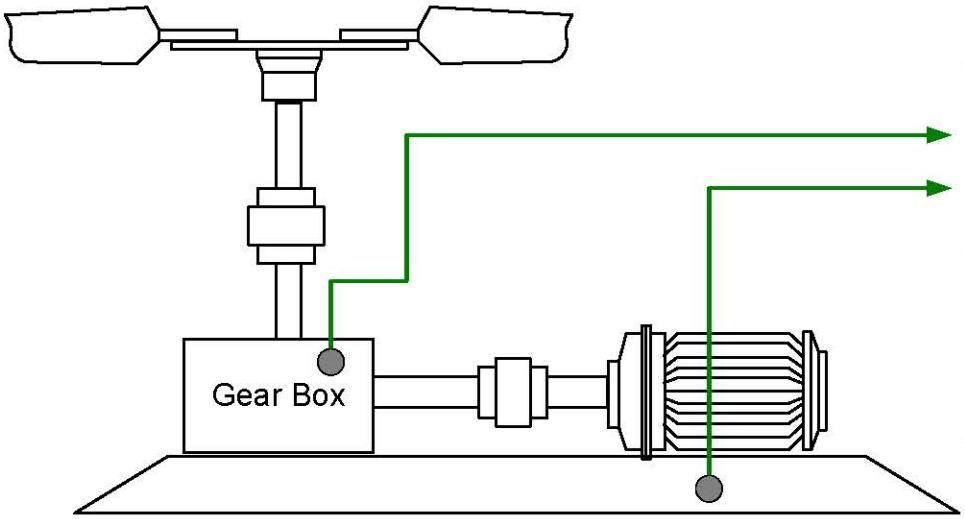
30-1500RPM



TR1101 TM0793V	Solution 1	4-20mA Buffered Ouput
DTM20 TM0793V	Solution 2	Redundant 4-20mA Buffered Output Relay Output Modbus Redundant power supply Configurable by CFG software
TM0793V	Solution 3	4-20mA Buffered Output Relay Output Modbus Local Display

ProvibTech
Innovative Machine Monitoring

30-1500RPM



 TR1101	 TM0793V	Solution 1	4-20mA Buffered Ouput
 DTM20	 TM0793V	Solution 2	Redundant 4-20mA Buffered Output Relay Output Modbus Redundant power supply Configurable by CFG software
	 TM0793V	Solution 3	4-20mA Buffered Output Relay Output Modbus Local Display

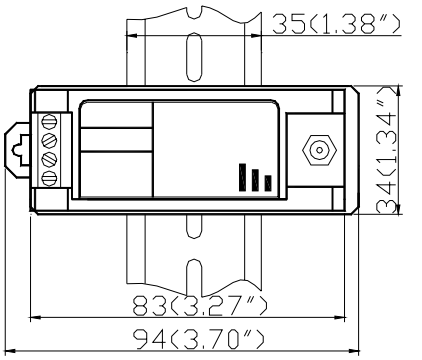
ProvibTech
PVT Innovative Machine Monitoring

TR1101 Seismic Vibration Transmitter

The TR1101 is a cost-effective solution for monitoring case vibration on balance of plant machines. The TR1101 conditions the signal from an accelerometer or velocity transducer and provides a 4-20mA output in acceleration, velocity or displacement.

Features

- ✓ **Measures machinery case vibration**
- ✓ **4-20mA output in acceleration, velocity or displacement**
- ✓ **Buffered output up to 300 meters (1,000 feet)**
- ✓ **Compatible with other manufacturers' sensors (accelerometer or velocity sensor)**
- ✓ **Aluminum casted (copper free) case with epoxy potting for better environmental protection and reliability**
- ✓ **Compact size**



DIN Rail Mount

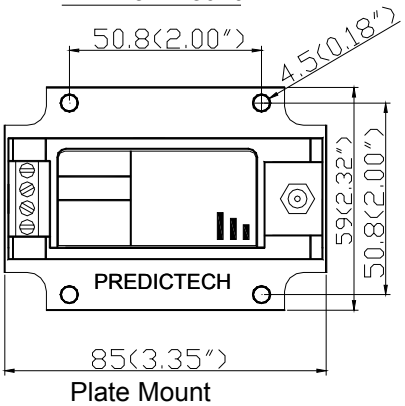


Plate Mount

Specifications

Electrical

Power Supply:
- 22-30VDC, 100mA (Non isolated)

Frequency Response (±3dB):
- Acceleration: 2.0 - 10 KHz
- Velocity: 2 - 10 KHz (velocity sensor)
- Velocity: 10 - 5 KHz (accelerometer)
- Displacement: 10 - 3 KHz (velocity sensor)
- Acceleration (low frequency): 1.0 - 100Hz
- Velocity (low frequency): 1.0 - 100Hz (TM079VD)
- Displacement (low frequency): 1.0 - 100Hz (TM079VD)

Sensor Interface:
- Sensitivity:
  - 100mV/g nominal for accelerometer or 4.0mV/mm/sec (100mV/in/sec) nominal for velocity sensor
  - 40mV/mm/sec (1000mV/in/sec) nominal for velocity TM079VD or 4mV/um (100mV/mil) nominal for displacement TM079VD
- Current Source:
  - Nominal 4mA@24VDC
- Connectors:
  - GAP/Buf: gap and buffered output
  - SIG: sensor signal
  - COM: signal com
  - 4-20mA: 4-20mA output

Electrical Specifications Continued

Buffered Output:
- Original vibration, un-filtered
- Impedance: 100 Ω
- Maximum cable distance: 300m (1,000ft)
- Sensitivity: same as the sensor

Overall Vibration:
- 4-20mA, source
- Driving load resistance up to 750 Ω

System Self-test:
- System OK: output 4-20mA
- System Not OK: output < 3.0mA

Physical

Height: 75mm (2.95")
Weight: 1.0kg (2.0 lbs)

Environmental

Temperature:
- Operation: -40°C to +70°C
- Storage: -40°C to +100°C

Humidity:
- 90% non-condensing

Order Information

*Factory Default

TR1101-AXX-EXX-GXX

AXX: Full Scale
- A00*: 0 - 200um pk-pk
- A01: 0 - 500um pk-pk
- A02: 0 - 100um pk-pk
- A03: 0 - 10mil pk-pk
- A04: 0 - 25mil pk-pk
- A05: 0 - 5.0mil pk-pk
- A06: 0 - 50mm/s pk
- A07: 0 - 100mm/s pk
- A08: 0 - 20mm/s pk
- A09: 0 - 2.0ips pk
- A10: 0 - 4.0ips pk
- A11: 0 - 1.0ips pk

AXX: Full Scale Continued
- A12: 0 - 5.0g pk
- A13: 0 - 10g pk
- A14: 0 - 5.0g pk (low frequency)
- A15: 0 - 10g pk (low frequency)
- A16: 0 - 50mm/s pk (low frequency, E01, E04)
- A17: 0 - 100mm/s pk (low frequency, E01, E04)
- A18: 0 - 500um pk-pk (low frequency, E04)
- A19: 0 - 200um pk-pk (low frequency, E04)
- A20: 0 - 2.0ips pk (low frequency, E04)
- A21: 0 - 4.0ips pk (low frequency, E01, E04)
- A22: 0 - 20mil pk-pk (low frequency, E04)
- A23: 0 - 10mil pk-pk (low frequency, E04)
- A24: 0 - 2.0ips (50 mm/s) rms
- A25: 0 - 1.0ips (25 mm/s) rms
- A26: 0 - 0.8ips (20 mm/s) rms
- A27: 0 - 0.5ips (12.5 mm/s) rms

EXX: Sensor Type (not included)
- E00*: Accelerometer TM0782A, TM0783A, TM0784A, TM0785A, TM0786A or any current mode accelerometer with 100mV/g
- E01: Velocity sensor TM0793V, TM0796V or any current mode velocity sensor with 4mV/mm/sec
- E02: 330500, 330525 velocity sensor
- E03: 330750 velocity sensor
- E04: TM079VD low frequency sensor

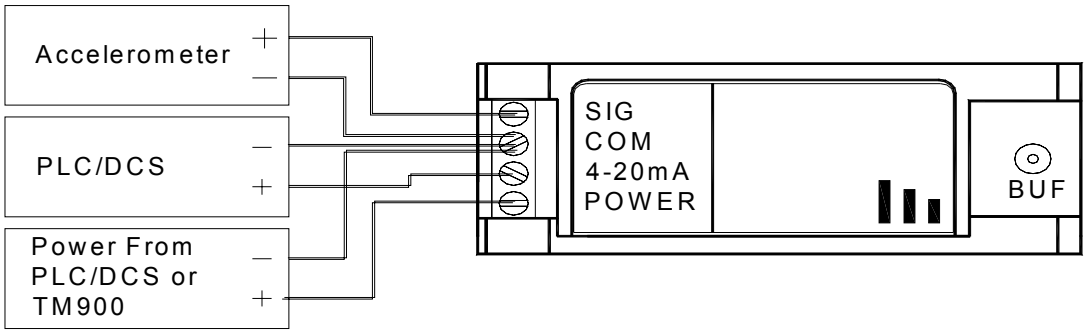
GXX: Mount
- G00*: DIN rail mount
- G01: Plate mount

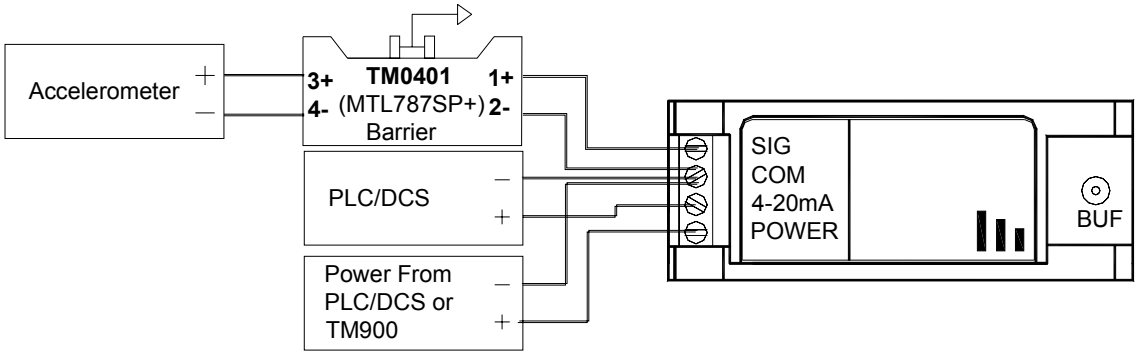
TR1101 Accessories

The TR1101 requires an external accelerometer or velocity sensor to work as a system.

TM0782A, TM0783A, TM0784A, TM0785A, TM0786A: Accelerometer
TM0793V, TM0796V: Velocity sensor
TM079VD: Low frequency velocity and displacement sensor
TM900: Power converter
TM0200: 3-1/2 digit display unit

Field-Wiring Diagram





Note:

Other barriers available:
TM0402: (STAHL 9001/51-280-091-141)
TM0407: (STAHL 9160/13-11-11)

DTM20 Seismic Vibration Distributed Transmitter Monitor

(Acceleration, Velocity and Displacement)

The DTM20 distributed vibration transmitter monitor provides a simple and cost-effective solution for monitoring critical and balance of plant equipment. The DTM's smart design is extremely reliable with redundancy in power supply inputs, 4-20mA outputs and relay outputs, as well as, a modbus communication port. The DTM interfaces with almost any vibration sensor (accelerometer or velocity transducer). The DTM is fully digital and may be configured in the field or come pre-configured from the factory.

Applications Include

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

DTM20 Fully Configurable by Software

- ✓ **Acceleration**
- ✓ **Velocity**
- ✓ **Displacement**

DTM20 Features

- ✓ **Measures acceleration, velocity or displacement**
- ✓ **Direct Modbus RTU interface**
- ✓ **Redundant 4-20mA outputs (pk or RMS)**
- ✓ **Redundant power supply inputs**
- ✓ **Fully digital field-configurable or factory pre-configured**
- ✓ **Dual relay outputs with Alert and Danger (SPDT)**
- ✓ **LED indication of system OK, Alert and Danger**
- ✓ **Local and remote RESET/BYPASS and trip-multiply**
- ✓ **Buffered output for condition monitoring**
- ✓ **Aluminum case (copper free) for RFI/EMI protection**

Specifications

Electrical

Power Supply:
- 22-30VDC, 150mA
- Galvanic isolation: power to circuits
- Accepts dual power supplies

Frequency Response (±3dB):
- Nominal Frequency:
  - Acceleration: 2 - 2 KHz.
  - Velocity: 2 - 2 KHz
  - Displacement: 4 - 2 KHz
- Low Frequency:
  - Acceleration: 0.5 - 100Hz
  - Velocity: 0.5 - 100Hz (TM079VD)
  - Displacement: 0.5 - 100Hz (TM079VD)

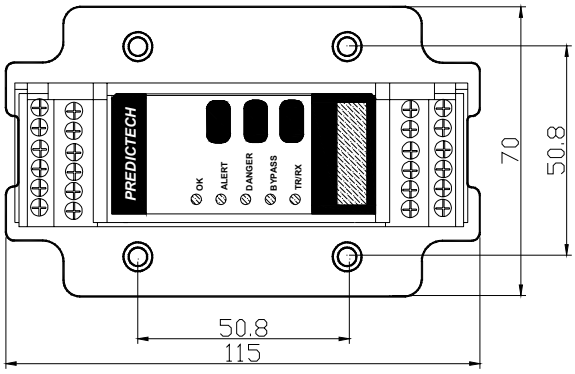
ICP Sensor Interface:
- Sensitivity:
  - 100mV/g for TM0782A
  - 4.0mV/mm/sec (100mV/in/sec) for TM0793V
  - 4mV/um for TM079VD
  - Sensitivity of any vibration sensor can be specified
- Current Source
  - Nominal 4mA@24VDC

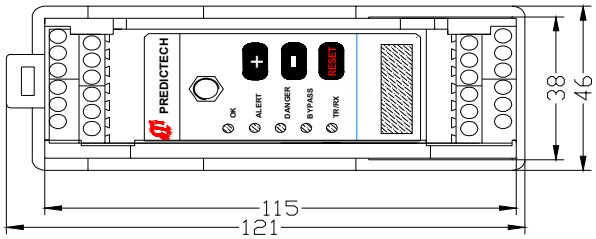
Seismic Velocity Sensor Interface:
- Sensitivity:
  - User specifies for any vibration sensor
  - Software programmable
  - (This type of seismic velocity sensor does not require external power)

Buffered Output:
- Original, un-filtered signal
- Impedance: 550 Ω
- Maximum cable distance: 300m (1,000ft)
- Sensitivity: same as the sensor
- Local BNC connection
- Remote terminal connection

Overall Vibration:
- Dual 4-20mA, source
- Maximum load resistance 500 Ω

Alarm Setup:
- 0 - 100% FS
- Accuracy: ±0.1%





Relays:
- Seal: Epoxy
- Capacity: 0.2A/240VAC, 0.4A/110VAC or 2.0A/24VDC, resistive load
- Relay type: SPTD
- Isolation: 1,000VDC

LED Machine Condition Indicator:
- OK: System OK indication
- ALT: Vibration over Alert level
- DNG: Vibration over Danger level
- BYP: System in bypass
- TRX: Digital transmitting

RESET/BYPASS:
- Local reset: On monitor front panel
- Remote RESET/BYPASS: Shorting the connector pin RESET and COM will engage system reset and bypass

Trip-Multiply
- Shorting the connector pin Trip-Multiply and COM will engage system alarm level increases to factor pre-setting

Modbus:
- Modbus RTU. With RS485 not isolated from the system, isolation can be done with the DTM96

Physical

Dimensions: Height: 75mm (2.95”)
Weight: 2.0lbs (1.0kg)

Environmental

Temperature:
- Operation: -40°C to +85°C
- Storage: -50°C to +100°C

Humidity:
- 90% non-condensing

Case:
- Aluminum casted (copper free) case

Certifications

CE certified with EMI compliance
CSA Class I, Div. 2, Groups A, B, C & D, T4
ATEX III 3G Ex nA II T4

Order Information

* Factory default

DTM20-AX-BX-SX

Customer fully-configurable seismic vibration DTM (requires DTM-CFG Software)

AX: Alarms and Sensor
- A0: Dual epoxy sealed relay alarms, current mode sensor
- A1: No alarm, current mode sensor
- A2: Dual epoxy sealed relay alarms, seismic velocity
- A3: No alarm, seismic velocity

BX: Mounting
- B0: DIN rail mount
- B1: Plate mount

SX: Approvals
- S0*: CE
- S1: CE
  - CSA Class I, Div.2, Groups A, B, C & D, T4
  - ATEX III 3G Ex nA II T4

DTM20-101-AXX-CX-GX-HX-IX-SX

Factory pre-configured seismic vibration DTM

AXX: Full Scale
- A00: 0 - 200um (8mil) pk-pk
- A01: 0 - 500um (20mil) pk-pk
- A02: 0 - 100um (4mil) pk-pk
- A03: 0 - 250um (10mil) pk-pk
- A05: 0 - 125um (5mil) pk-pk
- A06*: 0 - 50mm/s (2.0 ips) pk
- A07: 0 - 100mm/s (4.0 ips) pk
- A08: 0 - 20mm/s (0.8 ips) pk
- A11: 0 - 25mm/s (1.0 ips) pk
- A12: 0 - 5.0g pk
- A13: 0 - 10g pk
- A26: 0 - 50mm/s (2.0 ips) rms
- A27: 0 - 100mm/s (4.0 ips) rms
- A28: 0 - 20mm/s (0.8 ips) rms
- A31: 0 - 25 mm/s (1.0 ips) rms

CX: Alarms
- C0*: Dual alarms with epoxy sealed relays
- C1: No Alarm

GX: Mounting
- G0*: DIN rail mount
- G1: Plate mount

HX: Sensors (not included)
- H0*: TM0782A or any current mode accelerometer with 100mV/g (A00-A05 not available)
- H1: TM0793V or any current mode velocity sensor with 4mV/mm/s (A12, 13 not applicable)
- H2: TM079VD (A12, 13 not available)
- HXXX: Seismic velocity sensor, Sensitivity = XXX mV/in/sec (A12, 13 not available)

IX: Frequency Response
- I0*: Normal frequency (H2 not available)
- I1: Low frequency (0.5-100Hz)

SX: Approvals
- S0*: CE
- S1: CE
  - CSA Class I, Div.2, Groups A, B, C & D, T4
  - ATEX III 3G Ex nA II T4

Optional Accessories

DTM-CAL

The DTM field calibration kit is capable of calibrating any 5mm, 8mm and 11mm probe system. The kit includes:

- ✓ DTM-CFG configuration and calibration software CD
- ✓ RS485-USB converter with cable
- ✓ TM0540 proximity probe field calibration kit

DTM-CFG-K

DTM configuration and calibration software kit includes:

- ✓ DTM-CFG configuration and calibration software CD
- ✓ RS485-USB converter with cable

TM900

Power converter with isolation. It converts 95-250 VAC into 24VDC and has the capability to power up to five DTM modules.

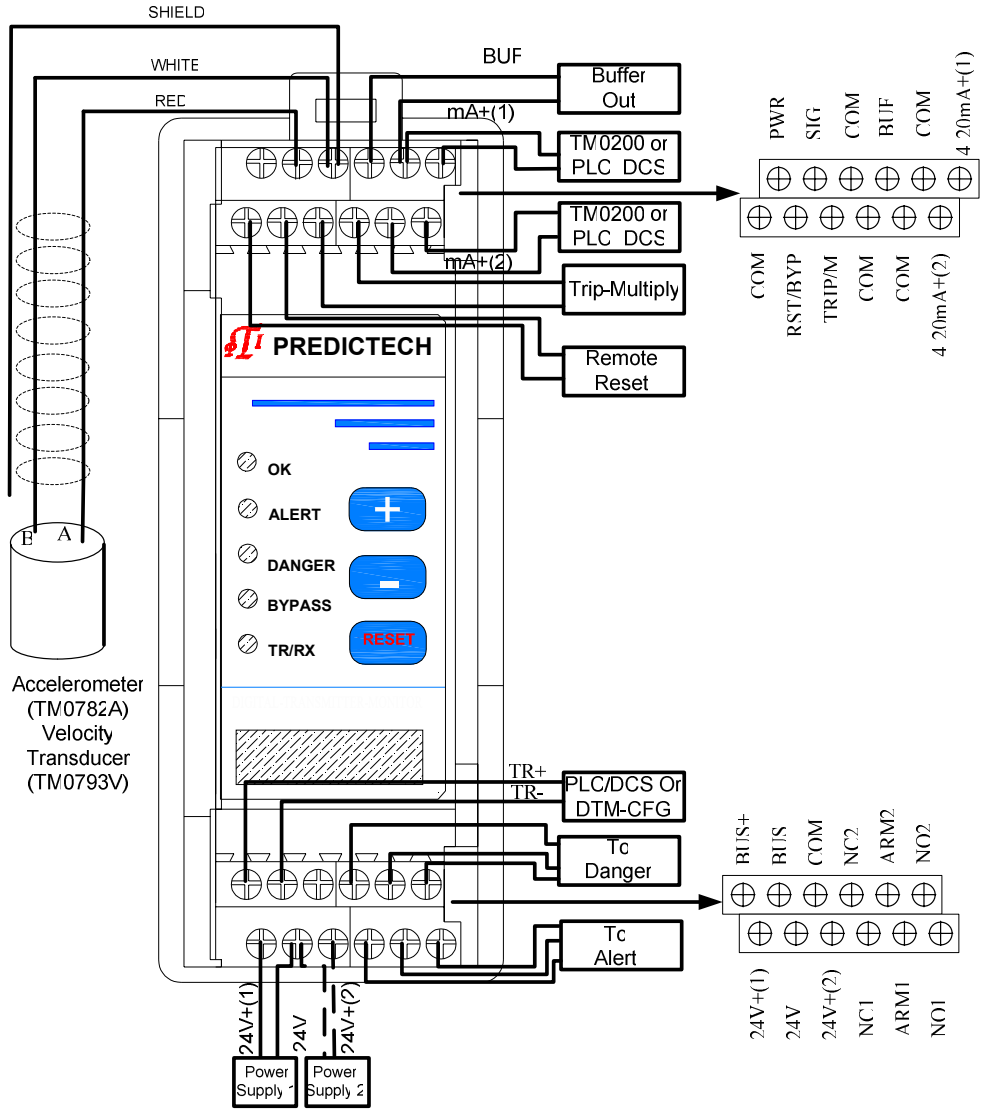
Sensors

TM0782A-K: Accelerometer kit
TM0783A: Accelerometer with cable
TM0793V-K: Velocity sensor kit
TM079VD: Low frequency sensor

TM0200

3-1/2 digit display unit. Requires 110VAC or 230VAC power input.

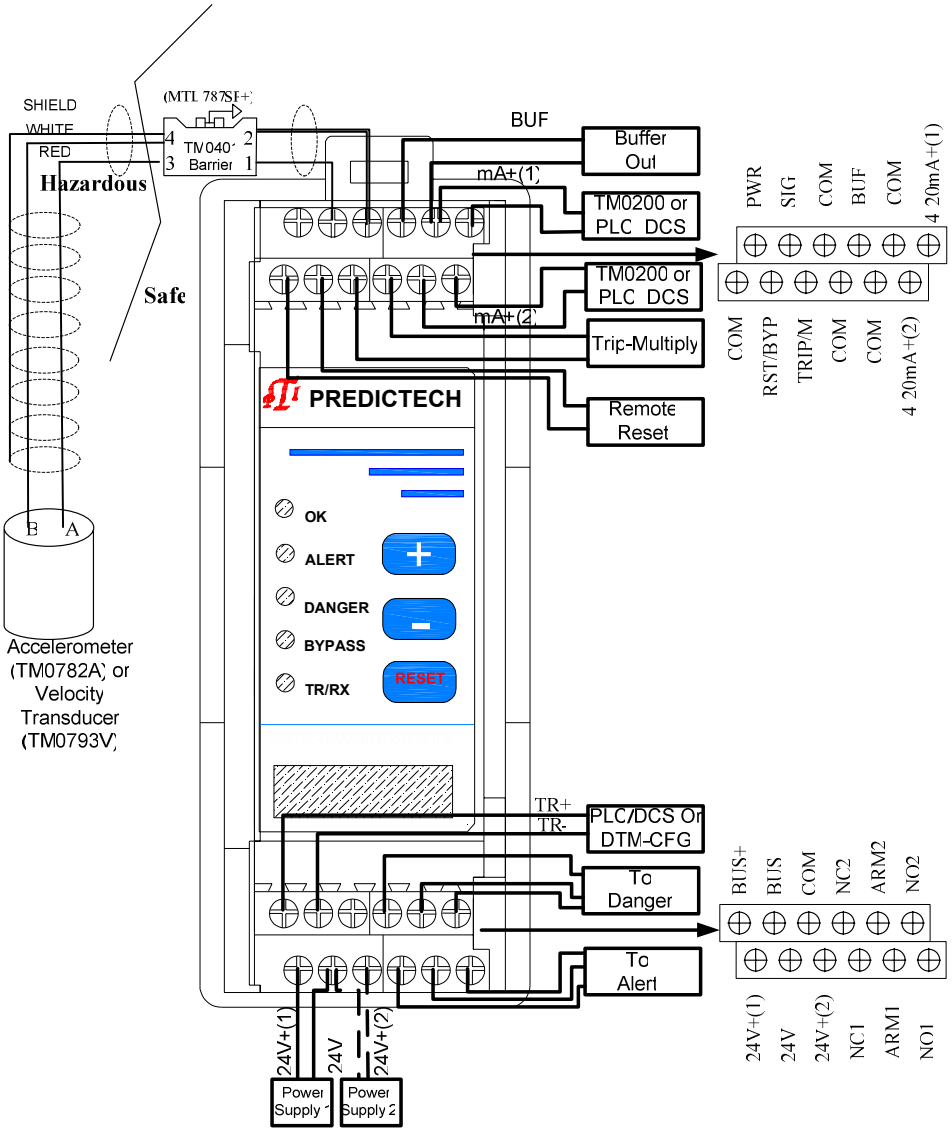
DTM20 Field-Wiring Diagram



Note:

- ✓ Power supply 2 is optional.
- ✓ Alert and Danger relays are connected as normally open. Connect ARM with NC to form a normally closed configuration.
- ✓ 4-20mA (2) is optional.
- ✓ Closing COM and RST/BYP with an external continuous or momentary switch will initiate a remote reset. Temporarily closing the switch will result in a system reset, continuous close will result in a system bypass.
- ✓ DTM20 series is compatible with other manufacturers' sensors (accelerometers and velocity transducers).

DTM20 Hazardous Area Field-Wiring Diagram



Note:

- ✓ Power supply 2 is optional.
- ✓ Alert and Danger relays are connected as normally open. Connect ARM with NC to form a normally closed configuration.
- ✓ 4-20mA (2) is optional.
- ✓ Closing COM and RST/BYP with an external continuous or momentary switch will initiate a remote reset. Temporarily closing the switch will result in a system reset, continuous close will result in a system bypass.
- ✓ DTM20 series is compatible with other manufacturers' sensors (accelerometer sand velocity transducers)
- ✓ Other barriers available:
  TM0402: (STAHL 9001/51-280-091-141)
  TM0407: (STAHL 9160/13-11-11)

DM200 Dual-Channel A/V/D Vibration Monitor

Introduction

DM200 is a dual channel vibration monitor. It is used to monitoring rotation machine's absolute vibration with acceleration, velocity or displacement.

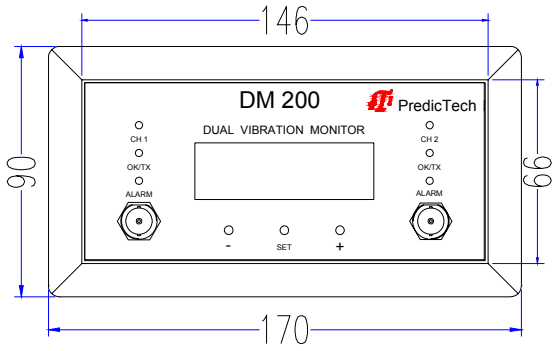
Features

- ✓ ***Dual channels case vibration monitoring with acceleration, velocity or displacement***
- ✓ ***Independent alert and danger dual relays on each channel***
- ✓ ***Fully digital, long term stability***
- ✓ ***IP 65 or NEMA 4X environmental rating***
- ✓ ***Bright 4 digit LED display***
- ✓ ***Front panel buffered output***
- ✓ ***Wide power supply range***
- ✓ ***Cost effective***

Specifications

Electrical

Power Supply:
90 －250VAC, 40 －60Hz, 0.5A
Frequency Response: (±3dB):
Standard: 2.0 －3.0 KHz without integration
Integration: 10 – 3.0 KHz
Low frequency option: 0.5－100Hz
External Sensor:
Accelerometer: 100 mV/g
Velocity sensor: 4.0mV/mm/s
Low frequency sensor: 4.0mV/um
Other sensors (specify in order)
Sensor Power:
Current mode sensor: 24VDC, 4mA
Low frequency sensor: 24VDC, 3 wire
Buffered Output:
Original vibration, un-filtered
Sensitivity/frequency resp.: same as the sensor
Impedance: < 100Ω
Maximum cable distance: 300m (1000ft)
Overall Vibration Output:
4－20mA source
Load resistance < 500Ω
System Not OK: Output<3.5mA
Alarms:
Dual dry-contact relays on each channel
Each alarm can be programmed separately
Setting: 0－100% full scale
Accuracy: ±0.1%
Relays (Alert/Danger):
Seal: Epoxy
Capacity: 3A/220VAC resistive load
Relay Type: SPDT
Isolation: 1000VDC
Alarm delay:
Factory programmable: 1-30 seconds. With time interval of 1 second (specify in order)
Nominal 6 seconds
Trip Multiply:
Factory programmable with a factor of 2 or 3 (specify in order).
Nominal factor or 3
RESET/ BYPASS:
Local RESET: The bottom "SET" button
Remote RESET/BYPASS
Display:
4 digit LED displays channel 1 and 2 in three seconds interval.
OK: channel ok indication
Alarm: alarm indication



Physical

Weight: 1300 g (2.86 lbs)
Installation: panel mount.
Dimension: see graphics.

Environmental

Temperature
Operation:-20°C to +70°C
Storage:-40°C to +100°C
Humidity:
95%non-condensing
With IP65 rating or NEMA 4X:
Front panel buffered output will not be available. Alarms setting and ZERO calibration will not be available from the front panel access.

Ordering Information

DM200-AXX–BX-CX-DX

AXX: Full Scale
A12: 0 ~ 5.0g pk
A13: 0 ~ 10g pk
A40: 0 ~ 20mm/s rms
A41: 0 ~ 25 mm/s rms
A42: 0 ~ 50mm/s rms
A43: 0 ~ 100mm/s rms
A46: 0 ~ 1.0 ips rms
A47: 0 ~ 2.0 ips rms
A48: 0 ~ 4.0 ips rms
A50: 0 ~ 20mm/s pk
A51: 0 ~ 25 mm/s pk
A52: 0 ~ 50mm/s pk
A53: 0 ~ 100mm/s pk
A56: 0 ~ 1.0 ips pk
A57: 0 ~ 2.0 ips pk
A58: 0 ~ 4.0 ips pk
A60: 0 ~ 100um pk-pk
A61: 0 ~ 125um pk-pk
A62: 0 ~ 200um pk-pk
A63: 0 ~ 250um pk-pk
A64: 0 ~ 500um pk-pk
A66: 0 ~ 5mil pk-pk
A67: 0 ~ 10mil pk-pk
A68: 0 ~ 20mil pk-pk

BX: Sensor (not include)
B0*: TM0782A, TM0783A, TM0786A TM016-782 or any ICP accelerometer with 100mV/g (A00-A05 not applicable)
B1: TM0793V, TM0796V, TM016-793 or any ICP velocity sensor with 4mV/mm/s (A12, 13 not applicable)
B2: TM079VD (A12, 13 not available)
BXXX: Seismic velocity sensor, Sensitivity = XXX mV/in/sec (A12, 13 not available)

CX: Frequency Response
C0*: Normal Frequency (B2 not applicable)
C1: Low Frequency (B2 only)

DX: Environmental Rating (front panel)
D0*: No rating
D1: IP65 or NEMA 4X (buffered output and setting not available)

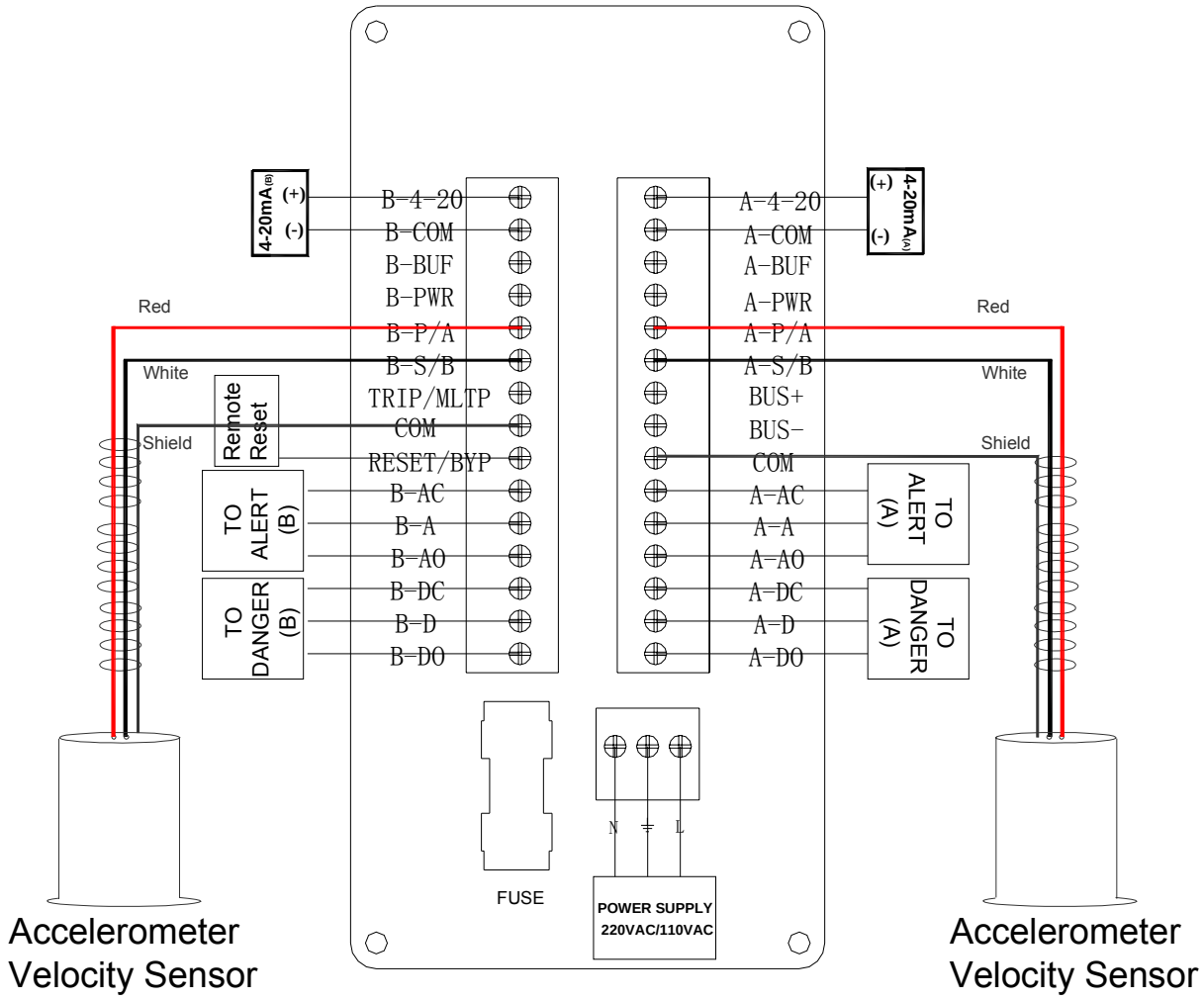
* Factory default

Optional accessories:

DM200 must works with external accelerometer or velocity sensors as a system.

TM0782A, TM0783A, TM0786A, TM016-782:
Accelerometers
TM0793V, TM0796V, TM016-793:
Velocity sensors
TM079VD:
Low frequency sensor
TM070X:
Sensor cables

Field-Wiring Diagram



Velocity Transducer TM0793V

Piezoelectric Velocity Transducer

The TM0793V-K velocity transducer kit consists of one velocity transducer and one 5 meter cable. This velocity transducer kit directly interfaces with ProvibTech's signal conditioners: distributed transmitter monitors (DTM), transmitters (TM), dual monitors (DM) and PT580 vibration switches to measure case vibration in velocity or displacement.

Specifications

Electrical

Sensitivity:

4.0mV/mm/sec (100mV/in/sec), @ 25°C, ±10%

Velocity Range:

5.0V pk

Amplitude Nonlinearity:

1%

Frequency Response:

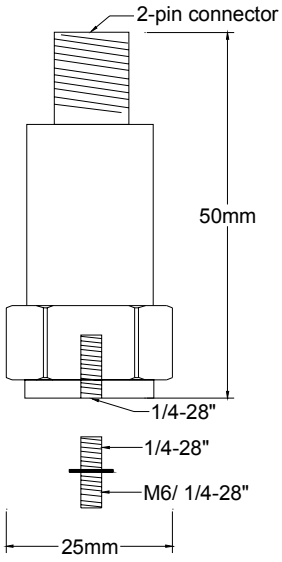
2 - 7,000Hz (±3dB)

Isolation:

Fully isolated

Transverse Sensitivity:

< 5% or axial



Power Requirement:

3 - 10mA constant current

18 - 30VDC

Resonance Frequency:

15 kHz

Bias Voltage:

10 - 14VDC

Maximum Transmission Distance:

300 meters (1,000 feet)

Environmental and Physical

Temperature Range:

-50°C to +120°C

Environmental Protection:

IP67

Weight:

250 grams

Case Material:

Stainless steel

Mounting:

1/4-28UNF tapped hole

Hazardous Area Approvals:

ATEX: II 1 G, Ex ia IIC T4;

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

PCEC: Ex ia IIC T4

Connection

A: Power (red)

B: COM (white)

Order Information

TM0793V-M
Velocity sensor with mounting screw 1/4-28” to M6×1

TM0793V-E
Velocity sensor with mounting screw 1/4-28” to 1/4-28”

TM0793V-K-M
Velocity sensor kit includes:
- ✓ TM0793V velocity sensor
- ✓ Mounting screw (1/4-28” to M6×1)
- ✓ TM0702-05

TM0793V-K-E
Velocity sensor kit includes:
- ✓ TM0793V velocity sensor
- ✓ Mounting screw (1/4-28” to 1/4-28”)
- ✓ TM0702-05

TM0793V-M-S
Velocity sensor with mounting screw 1/4-28” to M6×1
Hazardous area approval

TM0793V-E-S
Velocity sensor with mounting screw 1/4-28” to 1/4-28”
Hazardous area approval

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: Seal 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)

TM0710: Mounting screw 1/4-28” - M6×1
TM0711: Mounting screw 1/4-28” - 1/4-28”
TM0712: Mounting screw 1/4-28” - M8
TM0713: Mounting screw 1/4-28” - M10