



TM Series Transmitter-Monitor

Continuous machinery monitoring

Continuous monitoring rotation machinery running condition is very important. By adopt the concept of machine condition monitoring, you will obtain increasing plant safety, productivity, and reducing maintenance cost.

ProvibTech's Transmitter-Monitor (TM) series provide the reliable, accurate information you need to assess the mechanical condition for early identification of machinery problems, which includes:

- ✓ **Imbalance**
- ✓ **Misalignment**
- ✓ **Mechanical looseness**
- ✓ **Bearing failure**
- ✓ **Shaft crack**
- ✓ **Defect gearbox, etc.**

4-20mA direct interface with PLC/DCS

Due to the improvement of electronics technology, DCS and PLC are widely used in machinery control and automation. Most of the features of a monitoring system can be achieved by DCS or PLC. In many case, customer only need a 4-20mA overall vibration to interface to their system. An optional Alert and Danger relay to direct

interface to their control system would be a more reliable way of alarming.

Distinguished features of TM Transmitter - Monitors

- ✓ Monitoring Thrust position, shaft vibration, case vibration, rotation speed, phase reference, etc.
- ✓ With most of the features of a typical monitoring system, capable of replacing rack mount monitoring system directly.
- ✓ Highly integrated. Some TMs only need proximity probe and extension cable. This simplify the system engineering design, increase reliability.
- ✓ Small in size, simple in installation, no need in field configuration.
- ✓ Cost effective.
- ✓ On-site condition monitoring with OK, Alert and Danger LED indication.
- ✓ Two alarming relays capable of carry 2A of current.
- ✓ Local and remote "RESET".
- ✓ Available in hazardous area.
- ✓ Buffered output of original vibration, un-filtered.
- ✓ Can be powered with 24VDC, 110VAC, or 220VAC.

TM Series Transmitter-Monitor Function Table

| | TM 101 | TM 201 | TM 202 | TM 301 | TM 302 | TM 501 | TM 502 |
|--------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Shaft Vibration | | ✓ | | ✓ | | | |
| Thrust Position | | | ✓ | | ✓ | | |
| Seismic Vibration | ✓ | | | | | | |
| Rotation Speed | | | | | | ✓ | ✓ |
| Rolling-Element Bearing | ✓ | | | | | | |
| Sleeve Bearing | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Accelerometer, Velocity pickup | ✓ | | | | | | |
| Proximity probe | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extension cable | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Driver | | ✓ | ✓ | | | ✓ | |
| Hazardous Area | ✓ | ✓ | ✓ | | | ✓ | |
| External Power | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Two-wire transmitter | | | | | | | |
| 4 – 20mA Output | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1 – 5V Output | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |



TM101 Transmitter-Monitor with Acceleration, Velocity and Displacement

Condition Monitoring

- ✓ Measuring any rotation machinery vibration.
- ✓ System can be used in hazardous area.

Output

- ✓ 4-20mA or 1-5V, source.
- ✓ Acceleration, velocity or displacement
- ✓ LED indication of system OK, Alert and Danger.
- ✓ Relay output of Alert and Danger (SPDT).
- ✓ Local and remote RESET/BYPASS.
- ✓ Buffered Output for condition monitoring
- ✓ 24VDC, 110VAC or 220VAC power input.



Specifications

Electrical

Power Supply:

- 22-30VDC, 100mA (Non isolated).
- 90 - 250VAC, 50Hz or 60Hz, 50mA.

Frequency Response (± 3 dB):

- Acceleration: 2.0 ~ 10KHz.
- Velocity: 10 ~ 5KHz.
- Displacement: 10 ~ 3KHz.
- Acceleration (low frequency): 1.0 ~ 100Hz.
- Velocity (low frequency): 1.5 ~ 100Hz.
- Displacement (low frequency): 2.0 ~ 100Hz.

Sensor Interface:

- Sensitivity: 100mV/g for accelerometer. Or 4.0mV/mm/sec (100mV/in/sec) for velocity sensor.

- Current Source
Nominal 4mA@24VDC.

- Connectors:
A/P: power(red).
B/S: com(white).

Buffered Output:

- Original vibration, un-filtered.
- Impedance: 100 Ω .
- Maximum cable distance: 300m (1000ft).
- Sensitivity: same as the sensor.

Overall Vibration:

- 4-20mA, source.
- Driving load resistance up to 750 Ω .
- 1-5V, source.
- Output impedance 250 Ω .

Alarm Setup:

- 0 ~ 100% FS.

Accuracy: $\pm 0.1\%$.

Relays:

- Seal: Epoxy.
- Capacity: 2A/220VAC or 2A/24VDC, resistive load.
- Relay type: SPDT.
- Isolation: 1000VDC.

Factory Default:

- Relay normally latched and de-energized.
- Timed alarm defect is approx. 3 seconds.
- Power-up inhibit is set to 10 seconds nominal.

LED Machine Condition Indicator:

- Green: Self-test passed, System works OK.
- Yellow: Vibration over Alert level.
- Red: Vibration over Danger level.

RESET/BYPASS:

- Local reset is on monitor front panel.
- Remote RESET/BYPASS: Short the connector pin RESET and COM will engage system reset and bypass.

Physical

- Dimension: Height: 75mm (2.95"), see figuration.
- Weight: 2.0lb (1.0kg).

Environmental

- Temperature:
Operation: -35°C ~ +70°C.
Storage: -40°C ~ +100°C.
- Humidity:
90% non-condensing.

Ordering Information

Standard Configuration:

TM101-A09-B00-C00-D00-E00-G00

Accelerometer kit:

TM0782A-K

TM101-AXX-BXX-CXX-DXX-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



Portable and Online Condition Monitoring Products

- 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
- A12: 0 ~ 5.0g pk
- A13: 0 ~ 10g pk
- A14: 0 ~ 5.0g pk (0.5 ~ 100Hz)
- A15: 0 ~ 10g pk (0.5 ~ 100Hz)
- A16: 0 ~ 50mm/s pk (1.5 ~ 100Hz)
- A17: 0 ~ 100mm/s pk (1.5 ~ 100Hz)
- A18: 0 ~ 500um pk-pk (2.0 ~ 100Hz, with TM0793V)
- A19: 0 ~ 200um pk-pk (2.0 ~ 100Hz, with TM0793V)
- A20: 0 ~ 2.0ips pk (1.5 ~ 100Hz)
- A21: 0 ~ 4.0ips pk (1.5 ~ 100Hz)
- A22: 0 ~ 20mil pk-pk (2.0 ~ 100Hz, with TM0793V)
- A23: 0 ~ 10mil pk-pk (2.0 ~ 100Hz, with TM0793V)

BXX: Power Supply.

- B00*: +24VDC
- B01: 220VAC
- B02: 110VAC
- B03: 90~250VAC

CXX: Alarm.

- C00*: With Epoxy sealed relays
- C01: No Alarm

DXX: Overall Vibration.

- D00*: 4-20mA
- D01: 1-5V

EXX: Buffered Output.

- E00*: With Buffered Output.
- E01: Without Buffered Output.

GXX: Mounting.

- G00*: DIN rail mounting.
- G01: Plate mounting.

* Denote factory default.

TM101 Accessories

TM101 must work with external accelerometer or velocity sensors as a system.

TM0782A-K: Accelerometer kit.

TM0783A: Accelerometer with cable.

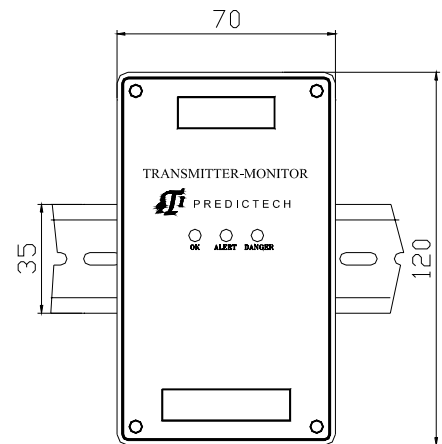
TM0793V-K: Velocity sensor kit.

TM900: Power converter.

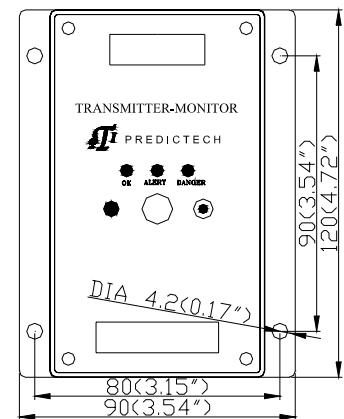
TM0200: 3-1/2 digit display unit.

TM0302: Housing, for 2 TMs or 6 drivers.

TM0306: Housing, for 6 TMs or 16 drivers.



TM - DIN Rail Mounting



TM Plate Mounting

TM101 Field-wiring Diagram

