



DTM Series Distributed Transmitter Monitor Introduction

Fully Digital

The DTM series digital transmitter monitor is PVTVM's vibration monitor, vibration transmitter and vibration switch all rolled into one package. Each DTM module can be operated independently or networked together to create a machine protection system. It has all the functionalities of an API 670 multi-channel monitor plus a unique field linearization feature which enables the use of any manufacturers' probe and extension cable combination. DTM modules are fully programmable, flexible, and highly reliable.

Fully Programmable and Flexible

The DTM is modular in nature and can easily be expanded into a larger vibration system with the addition of a:

DTM10 (Proximity Probe Sensor Module)

DTM 20 (Case Vibration Sensors Module)

DTM 96 (Communication Module)

DTM- CFG (Configuration Software)

DTM10 is a proximity probe sensor module which provides measurements in radial vibration, axial position(thrust), and speed / phase reference. The DTM10 works with any proximity probe system combination (including other manufacturers) and can be used:

- With or without Probe Driver
- In any combination of probe and extension cable. The DTM10 has a field linearization feature which enables the DTM10 to interface to any proximity probe system. This feature greatly reduces the requirement for spare parts.
- Works with any shaft material (Steel, Tungsten, K-monel and more).

DTM20 is a case mounted seismic sensor module which provides case vibration measurements in acceleration, velocity, or displacement. The DTM20 works with any case mounted sensor (including other manufacturers):

- Accelerometers
- Velocity Transducers

DTM96 is a communication module that can be used to network up to (32) DTMs together to form a vibration protection system. The DTM96 can be used to communicate directly with control systems (PLC or DCS) via modbus to provide data from the DTMs such as: alarm status, system status, overall value, and more.

DTM-CFG is the software used to configure the DTM modules (DTM10 and DTM20) either with a local laptop computer or a remote computer on the network (requires Modbus connection).

Configurable Parameters:

- Measurement Type (Case Vibration, Radial Vibration, Axial Position, and Speed/Phase)
- Sensor Type and Sensitivity (Proximity Probe, Accelerometer and Velocity Transducer)
- Full Scale Range (g, ips, mm/s, rms, pk, etc..)
- Time Delays
- Alarm Set Points

Observe:

- Alarm and Channel OK Status
- Trip Multiply
- Bypass and Overall Vibration Level

Control:

- Trip Multiply values
- Bypass and Reset functions

Note: The DTM can be pre-configured at the factory. DTM-CFG software is only required when field configuration is desired.



DTM Distributed Transmitter Monitor

Highly Reliable System

The DTM was designed to be used for critical machines as well as balance of plant applications. Built into every DTM is a system redundancy based upon a reliable microprocessor and proprietary system diagnostics which all contribute to a robust system design which will maximize system uptime.

Power Redundancy- The DTM module has redundant power supply inputs to maximize the reliability of the system. A single power supply failure will not affect the operation of the system.

Output Redundancy- The DTM module is equipped with redundant 4-20mA outputs, redundant relay outputs, and a Modbus communication port. The DTM relay outputs can be configured for any logic configuration required.

Channel Redundancy- The DTM can be configured for triple redundancy with multiple DTMs networked together.

System Diagnostics- The DTM performs internal diagnostic tests to search for errors: sensor status, supply voltage, system power up, fieldbus status and more. If there is an error, the system OK status LED on the DTM will go off, and an error will be registered for the channel and sent via Modbus.

Reliable Microprocessor- critical data and system configuration is stored in a solid-state memory chip. The memory chips are designed not to lose data during an interruption of power. Once power is restored, the critical data and system configuration are recovered from the memory chips.

Additional Features

Power-Up Inhibit- This feature decreases false alarms due to higher vibration levels during machine start-up.

Condition Monitoring- Each DTM module has a buffered output for easy connection to a condition monitoring system or other vibration analysis hardware.





Selection Guide of DTM Modules

Model Number	DTM10	DTM20	DTM96	DTM-CFG
	Radial Shaft Vibration, Thrust & Speed	Case Vibration	Accessory: Communication Module	Accessory: Configuration Software
Available as Pre- Configured or Field Programmable *1	•	•		•
Vibration Measurements				
Radial Vibration	•			
Axial Position	•			
Speed/ Phase Reference	•			
Case Vibration		•		
Sensor Interfaces				
Accelerometer		•		
Velocity Transducer		•		
Proximity Probe	•			
Works With or Without Probe Driver	•			
Outputs/ Communications				
Redundant 4-20mA Output	•	•		
Relay Output	•	•		
Redundant Power Supply Input	•	•		
Modbus Output	•	•	• (isolation)	
Buffered Output	•	•		
Features				
Push Button Setup (Limited Settings)	•	•		
Power-Up Inhibit	•	•		
System OK Checking	•	•		
Hazardous Rating (CSA, ATEX, TR CU) II 3 G Ex nA II T4 Gc Class I, Div.2; Grps A, B, C & D, T4 2Ex nA IIC T4 X Gc	•	•	•	
Network DTMs via Modbus *2	•	•	•	
Warranty- 5 years	•	•	•	

• = Complete Offering, S= Single 4-20mA Output or power supply input

Notes:

*1 = Field programming requires DTM-CFG-K Configuration Software kit. Without the software, the DTMs can only be configured for alarm set points and ZERO adjustment.

*2 =To network up to 32 DTMs via Modbus, requires (1) DTM96 Communication Module



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Fully Programmable and Flexible

The DTM is modular in nature and can easily be expanded into a larger vibration system with the addition of a:

DTM10 (Proximity Probe Sensor Module)

DTM 20 (Case Vibration Sensors Module)

DTM 96 (Communication Module)

DTM- CFG (Configuration Software)

DTM10 is a proximity probe sensor module which provides measurements in radial vibration, axial position(thrust), and speed / phase reference. The DTM10 works with any proximity probe system combination (including other manufacturers) and can be used:

- With or without Probe Driver
- In any combination of probe and extension cable. The DTM10 has a field linearization feature which enables the DTM10 to interface to any proximity probe system. This feature greatly reduces the requirement for spare parts.
- Works with any shaft material (Steel, Tungsten, K-monel and more).

DTM20 is a case mounted seismic sensor module which provides case vibration measurements in acceleration, velocity, or displacement. The DTM20 works with any case mounted sensor (including other manufacturers):

- Accelerometers
- Velocity Transducers

DTM96 is a communication module that can be used to network up to (32) DTMs together to form a vibration protection system. The DTM96 can be used to communicate directly with control systems (PLC or DCS) via modbus to provide data from the DTMs such as: alarm status, system status, overall value, and more.

DTM-CFG is the software used to configure the DTM modules (DTM10 and DTM20) either with a local laptop computer or a remote computer on the network (requires Modbus connection).

Configurable Parameters:

- Measurement Type (Case Vibration, Radial Vibration, Axial Position, and Speed/Phase)
- Sensor Type and Sensitivity (Proximity Probe, Accelerometer and Velocity Transducer)
- Full Scale Range (g, ips, mm/s, rms, pk, etc..)
- Time Delays
- Alarm Set Points

Observe:

- Alarm and Channel OK Status
- Trip Multiply
- Bypass and Overall Vibration Level

Control:

- Trip Multiply values
- Bypass and Reset functions

Note: The DTM can be pre-configured at the factory. DTM-CFG software is only required when field configuration is desired.



DTM Distributed Transmitter Monitor

Highly Reliable System

The DTM was designed to be used for critical machines as well as balance of plant applications. Built into every DTM is a system redundancy based upon a reliable microprocessor and proprietary system diagnostics which all contribute to a robust system design which will maximize system uptime.

Power Redundancy- The DTM module has redundant power supply inputs to maximize the reliability of the system. A single power supply failure will not affect the operation of the system.

Output Redundancy- The DTM module is equipped with redundant 4-20mA outputs, redundant relay outputs, and a Modbus communication port. The DTM relay outputs can be configured for any logic configuration required.

Channel Redundancy- The DTM can be configured for triple redundancy with multiple DTMs networked together.

System Diagnostics- The DTM performs internal diagnostic tests to search for errors: sensor status, supply voltage, system power up, fieldbus status and more. If there is an error, the system OK status LED on the DTM will go off, and an error will be registered for the channel and sent via Modbus.

Reliable Microprocessor- critical data and system configuration is stored in a solid-state memory chip. The memory chips are designed not to lose data during an interruption of power. Once power is restored, the critical data and system configuration are recovered from the memory chips.

Additional Features

Power-Up Inhibit- This feature decreases false alarms due to higher vibration levels during machine start-up.

Condition Monitoring- Each DTM module has a buffered output for easy connection to a condition monitoring system or other vibration analysis hardware.





Selection Guide of DTM Modules

Model Number	DTM10	DTM20	DTM96	DTM-CFG
	Radial Shaft Vibration, Thrust & Speed	Case Vibration	Accessory: Communication Module	Accessory: Configuration Software
Available as Pre- Configured or Field Programmable *1	•	•		•
Vibration Measurements				
Radial Vibration	•			
Axial Position	•			
Speed/ Phase Reference	•			
Case Vibration		•		
Sensor Interfaces				
Accelerometer		•		
Velocity Transducer		•		
Proximity Probe	•			
Works With or Without Probe Driver	•			
Outputs/ Communications				
Redundant 4-20mA Output	•	•		
Relay Output	•	•		
Redundant Power Supply Input	•	•		
Modbus Output	•	•	• (isolation)	
Buffered Output	•	•		
Features				
Push Button Setup (Limited Settings)	•	•		
Power-Up Inhibit	•	•		
System OK Checking	•	•		
Hazardous Rating (CSA, ATEX, TR CU) II 3 G Ex nA II T4 Gc Class I, Div.2; Grps A, B, C & D, T4 2Ex nA IIC T4 X Gc	•	•	•	
Network DTMs via Modbus *2	•	•	•	
Warranty- 5 years	•	•	•	

• = Complete Offering, S= Single 4-20mA Output or power supply input

Notes:

*1 = Field programming requires DTM-CFG-K Configuration Software kit. Without the software, the DTMs can only be configured for alarm set points and ZERO adjustment.

*2 =To network up to 32 DTMs via Modbus, requires (1) DTM96 Communication Module

DTM10 Proximity Distributed Transmitter-Monitor

(Shaft Vibration, Thrust Position and Speed)

The DTM10 distributed vibration transmitter-monitor is ideal for monitoring machine vibration using proximity probes and a Modbus interface to a PLC or DCS system. The DTM also contains redundant power supplies and redundant 4-20mA transmissions. Using PVTVM's unique strategy, the DTM can interface with almost any proximity probe system without hardware changes.

Applications include:

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

DTM10 Fully Configurable via Software

- ✓ Vibration Monitor Module
- ✓ Thrust Position Monitor Module
- ✓ Speed Monitor Module
- ✓ Phase Reference Monitor module
- ✓

DTM10 Features

- ✓ Interface with almost any manufacture's proximity probe system
- ✓ Works with or without probe driver
- ✓ Direct Modbus RTU interface
- ✓ Redundant 4-20mA outputs
- ✓ Redundant power supplies
- ✓ Measure shaft vibration, thrust position, or speed
- ✓ Full digital field-configuration
- ✓ Dual alarms (SPDT)
- ✓ LED indication of system OK, Alert , Danger, and Bypass
- ✓ Local and remote RESET/BYPASS and Trip-multiply
- ✓ Buffered Output for condition monitoring
- ✓ Aluminum case for RFI/EMI reduction
- ✓ Digital condition monitoring (optional)





Specifications

Electrical

Power Supply:

22-30VDC, 150mA.
Galvanic isolation

Frequency Response (-3dB):

Nominal frequency: 4 ~ 3000Hz
Low frequency: 0.5 ~ 100Hz

Proximity probe Interface:

Sensitivity:
5mm and 8mm probe: 8 mV/um (200 mv/mil)
11mm probe: 4 mv/um (100 mv/mil)
25mm probe: 2mv/um (50 mv/mil)

Buffered Output:

Original, un-filtered signal
Impedance: 150Ω
Maximum cable distance: 300m (1000ft)
Sensitivity: same as the sensor
Local BNC connection and terminal block
S0 and S1 options: Source, Non isolated
S2 and S3 options:
Passive, Galvanic isolation, 1000VDC
Power supply range: 22-30VDC

4-20mA Output:

Dual 4-20mA, sourced (loop power not required)
Maximum load resistance: 380Ω

Alarm Setup:

0 ~ 100% FS.
Accuracy: ±0.1%.
Delay: 1~60s, according to 1 second increase,
default is 3s. Speed monitor without delay.

Relays:

Seal: Epoxy
Capacity: 0.2A/240VAC, 0.4A/110VAC or
2.0A/24VDC, resistive load
Relay type: SPTD
Isolation: 1000VDC

LED Machine Condition Indicator:

OK: System OK indication
ALT: Vibration over ALERT level
DNG: Vibration over DANGER level
BYP: System in BYPASS

TRX: Digital Transmission Active

RESET/BYPASS:

Front panel push button
Remote RESET/BYPASS terminals

Trip Multiply:

Double Multiply or Triple Multiply set in DTM-CFG
Short Trip/Multi terminal to COM terminal
System alarm level will increase by a factor of 2 or 3
(DTM10-201 / 301 only)

Modbus:

RS485 Modbus RTU
Not isolated (use DTM96 for isolation)

Local push button programming:

Alert and danger set-point, ZERO calibration

Software programming (DTM-CFG):

Alert and danger set-point, time delay
ZERO and Full-Scale calibration
Full-scale high and low setup
Alarm latching/ non-latching, energized/ de-energized
Alarms programmable with alert, danger or system ok
Probe selection, linearization, and system calibration
Monitor function change: vibration, position, or speed
Modbus communication setup
Trip-multiply setup
Real-time bar-graph and alarms
Configure speed monitor to phase reference only
monitor
3 layers of password protection

Digital condition monitoring (optional)

Condition management software or portable vibration data collector of PVTVM could collect, store, and analyze machine health condition based on vibration via the bus communication of the DTM10.

Dynamic waveform data:

Real-time vibration data could be uploaded and the waveform and spectrum plot could be view by Condition management software or portable vibration data collector.

Trend Data:

The vibration data could be periodically stored by the DTM10 when it's powered on. User could collect trend data and view trend plots by Condition management software or portable vibration data collector. The trend sampling interval is configured by the related DTM-CFG software. DTM10's factory default is 10 hours. Every DTM10 could store maximum 1024 trend data.

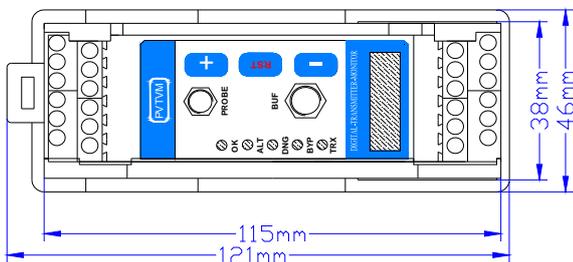
Alarm Data:

The dynamic alarm data could be stored by the DTM10 when it's powered on. The DTM10 only stores one alarm data with highest measured value. User could view waveform and spectrum plot of alarm data by Condition management software or portable vibration data collector.

Physical

Dimension:

Height: 75mm (2.95")
see figure below
Weight: 0.9lb (0.4kg)



Rail Mounting

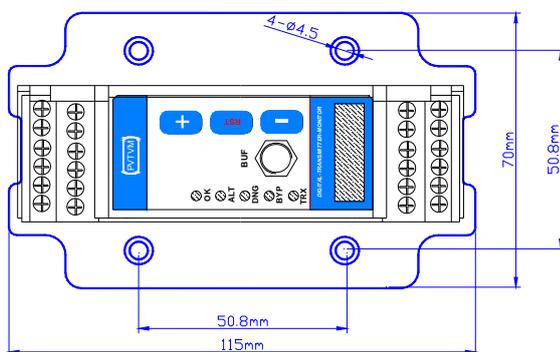


Plate Mounting

Environmental

Temperature:

Operation: -40°C ~ +85°C
Storage: -50°C ~ +100°C

Humidity: 90% non-condensing

Case: Aluminum

Certification

CE certified with EMC compliance

CSA: Class I, Div. 2, Grps A,B,C&D,T4

ATEX: II 3 G Ex nA IIC T4 Gc

EN IEC 60079-0:2018

EN 60079-15:2010

IECEX: Ex nA IIC T4 Gc

IEC 60079-0 : 2017(Ed. 7)

IEC 60079-15 : 2010(Ed. 4)

TR CU: 2Ex nA IIC T4 X Gc

№ TC RU C-US.AA87.B.01024

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GOST 31610.0-2014 (IEC 60079-0: 2011) Explosive

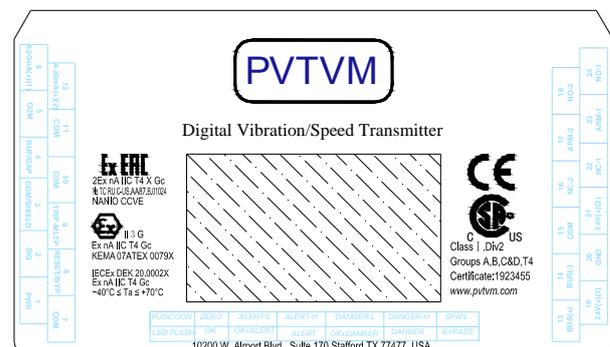
media. Part 0. Equipment. General requirements

GOST 31610.15-2014 / IEC 60079-15: 2010 Explosive

atmospheres. Part 15. Equipment with type of protection "n".

Hazardous area

Marking:



ATEX Standards:

EN IEC 60079-0 : 2018

EN 60079-15 : 2010

IECEX

IEC 60079-0 : 2017(Ed. 7)

IEC 60079-15 : 2010(Ed. 4)

Special condition in hazardous area:

- The ambient temperature range is: $-40^{\circ}\text{C} \leq T_a \leq 70^{\circ}\text{C}$
- DTMs must be placed inside an enclosure that is in accordance with EN 60079-15:2010.
- Provisions must be made externally to prevent the rated voltage from being exceeded by transient disturbances of more than 40 %.

Specific condition for safe use:

- The equipment shall only be used in an area of not more than Pollution Degree 2, as defined in IEC 60664-1.



Ordering Information

DTM10-AX-BX-CX-EXX-MX-SX

Customer configurable proximity distributed transmitter-monitor

Distributed vibration monitor, fully field configurable, with Modbus RTU.

AX: Alarms.

- A0: With Epoxy sealed relays
- A1: No Alarm

BX: Mounting.

- B0: DIN rail mounting.
- B1: Plate mounting.

CX: External Proximity Driver.

- C0: Not required (Requires Probe and Extension Cable) (301, 302, 502 type modules)
- C1: Required (Requires Probe, Extension Cable and Probe Driver) (201, 202, 501 type modules)

EXX: Probe and Cable (Series and Length) -Purchased Separately

- E00*: TM0180, 5m Cable
- E01: TM0180, 9m Cable
- E02: 8mm Probe, 3300, 5m Cable
- E03: 8mm Probe, 3300, 9m Cable
- E04: 8mm Probe, 7200, 5m Cable
- E05: 8mm Probe, 7200, 9m Cable
- E06: TM0105, 5m Cable
- E07: TM0105, 9m Cable
- E08: TM0110, 5m Cable
- E09: TM0110, 9m Cable
- E10: 11mm Probe, 3300, 5m Cable
- E11: 11mm Probe, 3300, 9m Cable
- E12: 11mm Probe, 7200, 5m Cable
- E13: 11mm Probe, 7200, 9m Cable
- E99: Other probe systems (requiring field calibration)

MX: Digital Communication

- M1*: With Modbus
- M2: With Modbus and digital condition monitoring

SX: Approvals and isolation.

- S0*: CE, with buffered output non-isolated
- S1: CE, with buffered output non-isolated.
CSA: Class I, Div. 2, Grps A,B,C&D,T4
ATEX: II 3 G Ex nA IIC T4 Gc
IECEX: Ex nA IIC T4 Gc
TR CU: 2Ex nA IIC T4 X Gc
№ TC RU C-US.AA87.B.01024

NANIO CCVE

- S2: CE, with buffered output isolated
- S3: CE, with buffered output isolated.
CSA: Class I, Div. 2, Grps A,B,C&D,T4
ATEX: II 3 G Ex nA IIC T4 Gc
IECEX: Ex nA IIC T4 Gc
TR CU: 2Ex nA IIC T4 X Gc
№ TC RU C-US.AA87.B.01024
NANIO CCVE

DTM10-201-AX-CX-GX-IX-MX-SX

Factory configured for vibration (probe driver required)

AX: Full Scale.

- A0*: 0 ~ 200um pk-pk
- A1: 0 ~ 1000um pk-pk
- A2: 0 ~ 100um pk-pk
- A3: 0 ~ 10mil pk-pk
- A4: 0 ~ 50mil pk-pk
- A5: 0 ~ 5.0mil pk-pk
- A6: 0 ~ 200um pk-pk (0.5 ~ 100Hz)
- A7: 0 ~ 1000um pk-pk (0.5 ~ 100Hz)
- A8: 0 ~ 100um pk-pk (0.5 ~ 100Hz)

CX: Alarms.

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

GX: Mounting.

- G0*: DIN rail mounting.
- G1: Plate mounting.

IX: Frequency Response.

- I0*: Normal Frequency (4~3000Hz)
- I1: Low Frequency (0.5~100Hz)

MX: Digital Communication

- M1*: With Modbus
- M2: With Modbus and digital condition monitoring

SX: Approvals.

- S0*: CE
- S1: CE
CSA: Class I, Div.2, Grps A,B,C&D,T4
ATEX: II 3 G Ex nA IIC T4 Gc
IECEX: Ex nA IIC T4 Gc
TR CU: 2Ex nA IIC T4 X Gc
№ TC RU C-US.AA87.B.01024
NANIO CCVE



DTM10-202-AX-CX-GX-SX

Factory configured for axial position (probe driver required)

AX: Full Scale.

- A0*: -1.0 - 0 - 1.0mm (-40 - 0 - 40mil)
(Requires TM0180 or other 8mm proximity probe transducer; TM0105 or other 5mm proximity probe transducer)
- A1: -2.0 - 0 - 2.0mm (-80 - 0 - 80mil)
(Requires TM0110 or other 11mm proximity probe transducer)
- A2: -5.0 - 0 - 5.0mm (-0.2 - 0 - 0.2inch)
(Requires TM0120 or other 25mm, 35mm proximity probe transducer)
- A3: -12.0 - 0 - 12.0mm (-0.5 - 0 - 0.5inch)
(Requires TM0150 or other 50mm proximity probe transducer)

CX: Alarms.

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

GX: Mounting.

- G0*: DIN rail mounting.
- G1: Plate mounting.

SX: Approvals.

- S0*: CE
- S1: CE
- CSA: Class I, Div. 2, Grps A,B,C&D,T4
- ATEX: II 3 G Ex nA IIC T4 Gc
- IECEX: Ex nA IIC T4 Gc
- TR CU: 2Ex nA IIC T4 X Gc
- № TC RU C- US.AA87.B.01024
- NANIO CCVE

DTM10-501-AX-CX-FXX-GX-SX

Factory configured for speed (probe driver required)

AX: Full Scale.

- A0: 0 ~ 1,000 rpm
- A1*: 0 ~ 3,600 rpm
- A2: 0 ~ 6,000 rpm
- A3: 0 ~ 10,000 rpm
- A4: 0 ~ 30,000 rpm
- A5: 0 ~ 50,000 rpm
- A6: phase reference output
- A7: phase reference output for digital condition monitoring

CX: Alarm.

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

FXX: Teeth per Revolution.

- F01*: 1
- FXX: Customer specify, number of teeth =XX

GX: Mounting.

- G0*: DIN rail mounting.
- G1: Plate mounting.

SX: Approvals.

- S0*: CE
- S1: CE
- CSA: Class I, Div.2, Grps A,B,C&D,T4
- ATEX: II 3 G Ex nA IIC T4 Gc
- IECEX: Ex nA IIC T4 Gc
- TR CU: 2Ex nA IIC T4 X Gc
- № TC RU C- US.AA87.B.01024
- NANIO CCVE



DTM10-301-AX-CX-EXX-GX-IX-MX-SX

Factory configured for vibration (built-in probe driver)

AX: Full Scale.

- A0*: 0 ~ 200um pk-pk
- A1: 0 ~ 500um pk-pk
- A2: 0 ~ 100um pk-pk
- A3: 0 ~ 10mil pk-pk
- A4: 0 ~ 25mil pk-pk
- A5: 0 ~ 5.0mil pk-pk
- A6: 0 ~ 200um pk-pk (0.5 ~ 100Hz)
- A7: 0 ~ 500um pk-pk (0.5 ~ 100Hz)
- A8: 0 ~ 100um pk-pk (0.5 ~ 100Hz)

CX: Alarms.

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

EXX: Probe and Cable.

- E00*: TM0180, 5m Cable
- E01: TM0180, 9m Cable
- E02: 8mm Probe, 3300, 5m Cable
- E03: 8mm Probe, 3300, 9m Cable
- E04: 8mm Probe, 7200, 5m Cable
- E05: 8mm Probe, 7200, 9m Cable
- E06: TM0105, 5m Cable
- E07: TM0105, 9m Cable
- E08: TM0110, 5m Cable
- E09: TM0110, 9m Cable
- E10: 11mm Probe, 3300, 5m Cable
- E11: 11mm Probe, 3300, 9m Cable
- E12: 11mm Probe, 7200, 5m Cable
- E13: 11mm Probe, 7200, 9m Cable

GX: Mounting.

- G0*: DIN rail mounting.
- G1: Plate mounting.

IX: Frequency Response.

- I0*: Normal Frequency (4~3000Hz)
- I1: Low Frequency (0.5~100Hz)

MX: Digital Communication

- M1*: With Modbus
- M2: With Modbus and digital condition monitoring

SX: Approvals and isolation.

- S0*: CE, with buffered output non-isolated
- S1: CE, with buffered output non-isolated.
CSA: Class I, Div. 2, Grps A,B,C&D,T4
ATEX: II 3 G Ex nA IIC T4 Gc
IECEX: Ex nA IIC T4 Gc
TR CU: 2Ex nA IIC T4 X Gc
№ TC RU C-US.AA87.B.01024
NANIO CCVE

- S2: CE, with buffered output isolated
- S3: CE, with buffered output isolated.
CSA: Class I, Div. 2, Grps A,B,C&D,T4
ATEX: II 3 G Ex nA IIC T4 Gc
IECEX: Ex nA IIC T4 Gc
TR CU: 2Ex nA IIC T4 X Gc
№ TC RU C-US.AA87.B.01024
NANIO CCVE

DTM10-302-AX-CX-EXX-GX-SX

Factory configured for axial position (built-in probe driver)

AX: Full Scale.

- A0*: -1.0 - 0 - 1.0mm (-40 - 0 - 40mil)
(Requires TM0180 or other 8mm proximity probe transducer)
- A1: -2.0 - 0 - 2.0mm (-80 - 0 - 80mil)
(Requires TM0110 or other 11mm proximity probe transducer)

CX: Alarms.

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

EXX: Probe and Cable.

- E00*: TM0180, 5m Cable
- E01: TM0180, 9m Cable
- E02: 8mm Probe, 3300, 5m Cable
- E03: 8mm Probe, 3300, 9m Cable
- E04: 8mm Probe, 7200, 5m Cable
- E05: 8mm Probe, 7200, 9m Cable
- E06: TM0105, 5m Cable
- E07: TM0105, 9m Cable
- E08: TM0110, 5m Cable
- E09: TM0110, 9m Cable
- E10: 11mm Probe, 3300, 5m Cable
- E11: 11mm Probe, 3300, 9m Cable
- E12: 11mm Probe, 7200, 5m Cable
- E13: 11mm Probe, 7200, 9m Cable

GX: Mounting.

- G0*: DIN rail mounting.
- G1: Plate mounting.

SX: Approvals and isolation.

- S0*: CE, with buffered output non-isolated
- S1: CE, with buffered output non-isolated.
CSA: Class I, Div. 2, Grps A,B,C&D,T4
ATEX: II 3 G Ex nA IIC T4 Gc
IECEX: Ex nA IIC T4 Gc
TR CU: 2Ex nA IIC T4 X Gc



№ TC RU C-US.AA87.B.01024

NANIO CCVE

- S2: CE, with buffered output isolated
- S3: CE, with buffered output isolated.
- CSA: Class I, Div. 2, Grps A,B,C&D,T4
- ATEX: II 3 G Ex nA IIC T4 Gc
- IECEX: Ex nA IIC T4 Gc
- TR CU: 2Ex nA IIC T4 X Gc

№ TC RU C-US.AA87.B.01024

NANIO CCVE

S0*: CE, with buffered output non-isolated

S1: CE, with buffered output non-isolated.

CSA: Class I, Div. 2, Grps A,B,C&D,T4

ATEX: II 3 G Ex nA IIC T4 Gc

IECEX: Ex nA IIC T4 Gc

TR CU: 2Ex nA IIC T4 X Gc

№ TC RU C-US.AA87.B.01024

NANIO CCVE

S2: CE, with buffered output isolated

S3: CE, with buffered output isolated.

CSA: Class I, Div. 2, Grps A,B,C&D,T4

ATEX: II 3 G Ex nA IIC T4 Gc

IECEX: Ex nA IIC T4 Gc

TR CU: 2Ex nA IIC T4 X Gc

№ TC RU C-US.AA87.B.01024

NANIO CCVE

DTM10-502-AX-CX-EXX-FXX-GX-SX

Factory configured for speed (built-in probe driver)

AX: Full Scale.

- A0: 0 ~ 1,000 rpm
- A1*: 0 ~ 3,600 rpm
- A2: 0 ~ 6,000 rpm
- A3: 0 ~ 10,000 rpm
- A4: 0 ~ 30,000 rpm
- A5: 0 ~ 50,000 rpm
- A6: phase reference output
- A7: phase reference output for digital condition monitoring

* Denote factory default.

CX: Alarms.

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

EXX: Probe and Cable.

- E00*: TM0180, 5m Cable
- E01: TM0180, 9m Cable
- E02: 8mm Probe, 3300, 5m Cable
- E03: 8mm Probe, 3300, 9m Cable
- E04: 8mm Probe, 7200, 5m Cable
- E05: 8mm Probe, 7200, 9m Cable
- E06: TM0105, 5m Cable
- E07: TM0105, 9m Cable
- E08: TM0110, 5m Cable
- E09: TM0110, 9m Cable
- E10: 11mm Probe, 3300, 5m Cable
- E11: 11mm Probe, 3300, 9m Cable
- E12: 11mm Probe, 7200, 5m Cable
- E13: 11mm Probe, 7200, 9m Cable

FXX: Teeth per Revolution.

- F01*: 1
- FXX: Customer specify, number of teeth =XX

GX: Mounting.

- G0*: DIN rail mounting.
- G1: Plate mounting.

SX: Approvals and isolation.



Optional Accessories

DTM-CAL

The DTM field calibration kit is capable of calibrating any 5mm, 8mm, or 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

The DTM configuration and calibration software kit includes:

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

PCM-TCP

Modbus RTU-TCP Converter

TM900A

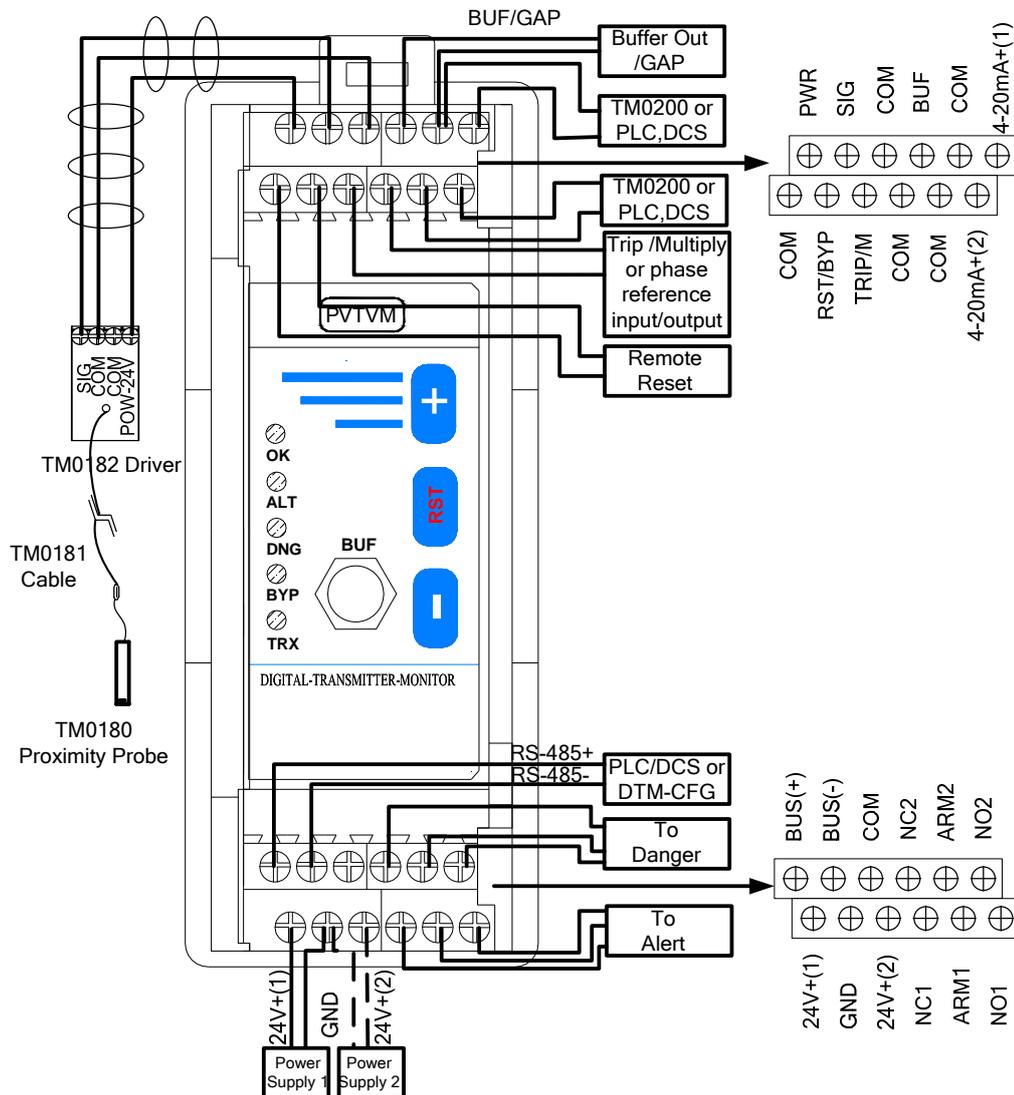
Din Rail Mounted Power Supply. Converts 100-240VAC into 24VDC and is capable of powering up to five DTM modules.

Proximity Sensor Systems

- ✓ **TM0180:** 8mm probe
- ✓ **TM0105:** 5mm probe
- ✓ **TM0110:** 11mm probe
- ✓ **TM0181:** Extension cable
- ✓ **TM0182:** Probe driver
- ✓ **TM0120:** 25mm probe system

DTM10 System Installation

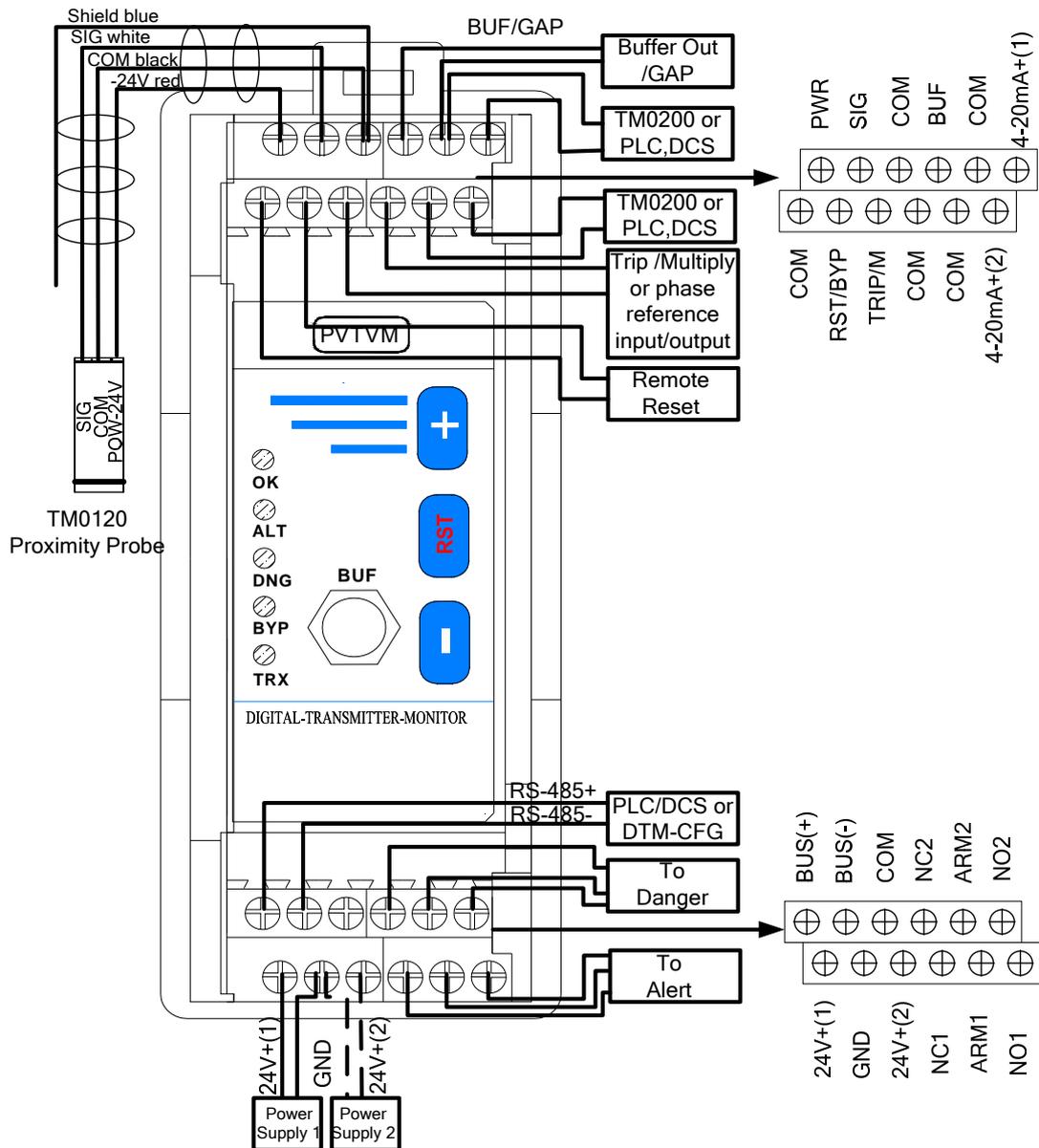
DTM10-201/202/501 Field-Wiring Diagram



Note:

- ✓ Power supply 2 and 4-20mA(2) are optional outputs used for redundancy.
- ✓ Alert and Danger relays are shown connected as normally open. Connect ARM and NC for normally closed.
- ✓ Connecting COM and RST/BYP with an external continuous or momentary closed switch will initiate a remote reset. Temporarily closing the switch will result in a system reset, continuous close will result in a system bypass.
- ✓ If the DTM10-201 has the digital condition monitoring function, the Trip/Multi and COM pins are used for phase reference input. Moreover, the DTM10-201 won't provide Multiply Alarm function anymore, so you should set Multiply Alarm property to "None" by DTM-CFG software.
- ✓ If Full Scale of DTM10-501 is phase reference output for digital condition monitoring (A7), Trip/Multi terminal provides the phase reference signal for the DTM10-201, DTM10-301, DTM20-101 or DM200. A DTM10-501 can provide the phase reference signal for up to 6 DTMs or DM200s.

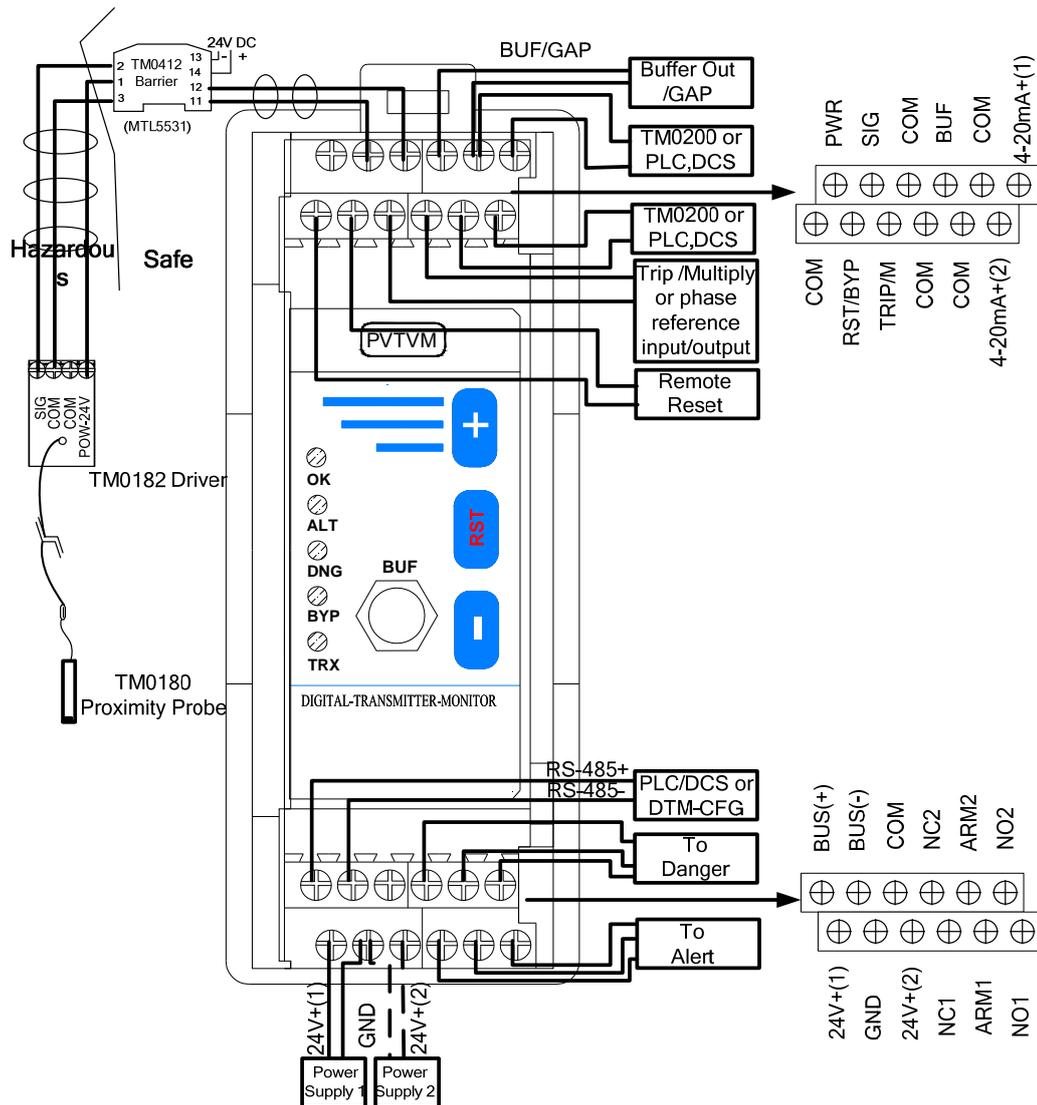
DTM10-202 Field-Wiring Diagram (Interfacing with TM0120)



Note:

- ✓ Power supply 2 and 4-20mA(2) are optional outputs used for redundancy.
- ✓ Alert and Danger relays are shown connected as normally open. Connect ARM and NC for normally closed.
- ✓ Connecting COM and RST/BYP with an external continuous or momentary closed switch will initiate a remote reset. Temporarily closing the switch will result in a system reset, continuous close will result in a system bypass.

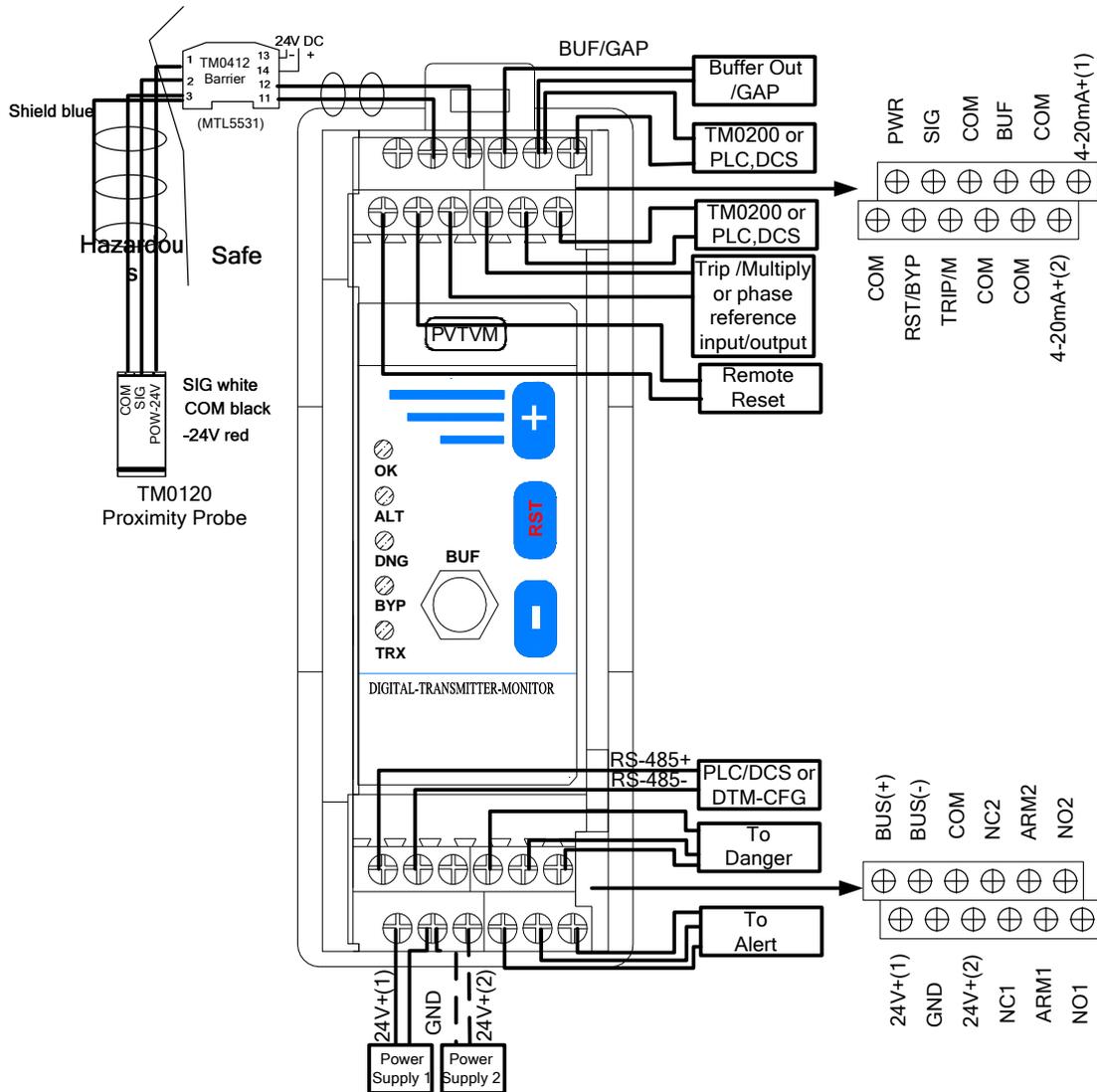
DTM10-201/202/501 Hazardous Area Field-Wiring Diagram



Note:

- ✓ Power supply 2 and 4-20mA(2) are optional outputs used for redundancy.
- ✓ Alert and Danger relays are shown connected as normally open. Connect ARM and NC for normally closed.
- ✓ Connecting COM and RST/BYP with an external continuous or momentary closed switch will initiate a remote reset. Temporarily closing the switch will result in a system reset, continuous close will result in a system bypass.
- ✓ If the DTM10-201 has the digital condition monitoring function, the Trip/Multi and COM pins are used for phase reference input. Moreover, the DTM10-201 won't provide Multiply Alarm function anymore, so you should set Multiply Alarm property to "None" by DTM-CFG software.
- ✓ If Full Scale of DTM10-501 is phase reference output for digital condition monitoring (A7), Trip/Multi terminal provides the phase reference signal for the DTM10-201, DTM10-301, DTM20-101 or DM200. A DTM10-501 can provide the phase reference signal for up to 6 DTMs or DM200s.
- ✓ Other barriers available:
TM0414: (STAHL 9002/00-260-138-001)

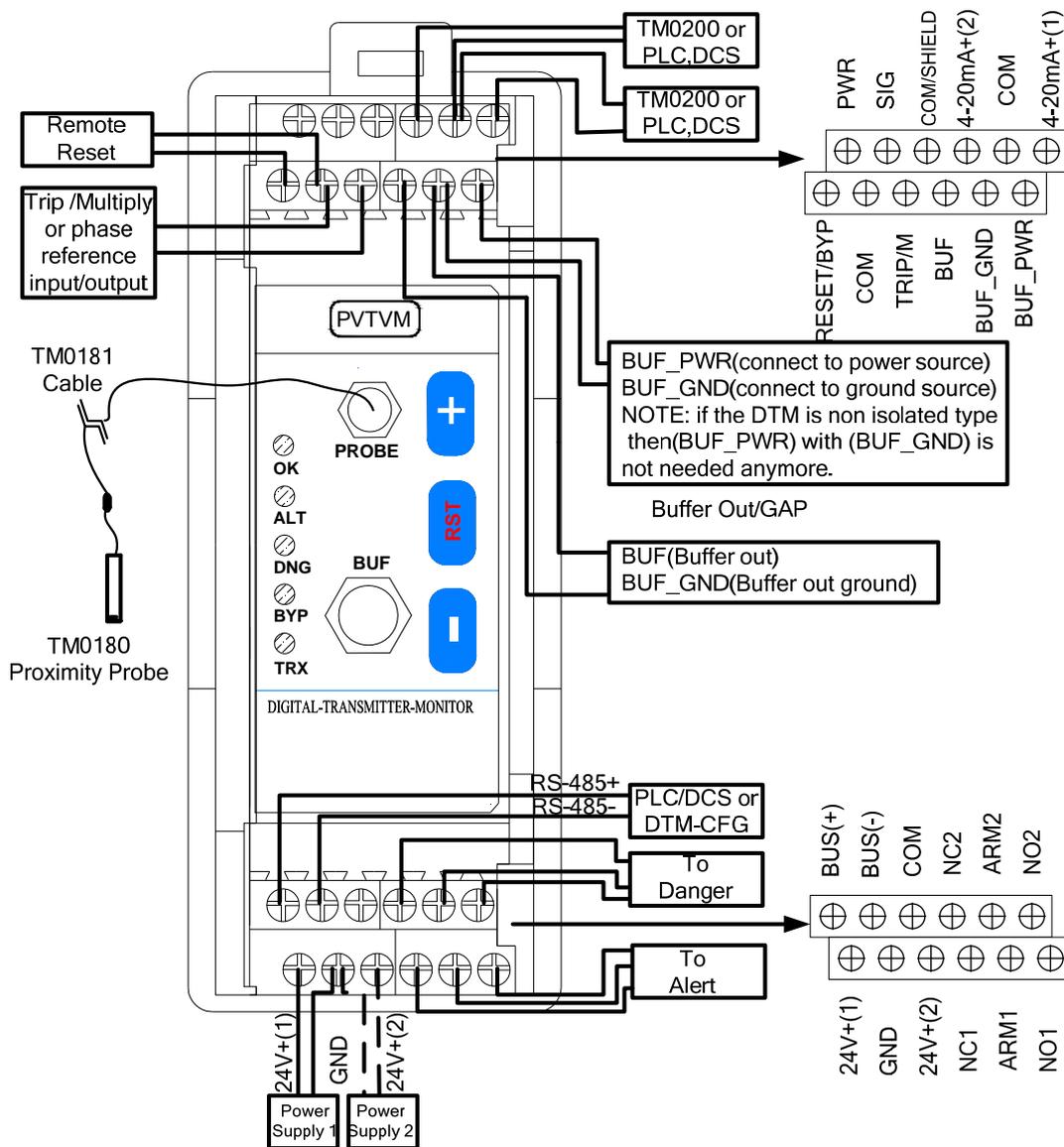
DTM10-202 Hazardous Area Field-Wiring Diagram (Interfacing with TM0120)



Note:

- ✓ Power supply 2 and 4-20mA(2) are optional outputs used for redundancy.
- ✓ Alert and Danger relays are shown connected as normally open. Connect ARM and NC for normally closed.
- ✓ Connecting COM and RST/BYP with an external continuous or momentary closed switch will initiate a remote reset. Temporarily closing the switch will result in a system reset, continuous close will result in a system bypass.
- ✓ Other barriers available:
TM0414: (STAHL 9002/00-260-138-001)

DTM10-301/302/502 Field-Wiring Diagram



Note:

- ✓ Power supply 2 and 4-20mA(2) are optional outputs used for redundancy.
- ✓ For ISOLATED option 24VDC power supply used BUF-PWR along with BUF_GND. For ISOLATED option two power supplies should be used, one power supply for (BUF_PWR and BUF_GND), second power supply to power up the DTM 24V(+)(1) and GND or 24V(+)(2)and GND .
- ✓ Alert and Danger relays are shown connected as normally open. Connect ARM and NC for normally closed.
- ✓ Connecting COM and RST/BYP with an external continuous or momentary closed switch will initiate a remote reset. Temporarily closing the switch will result in a system reset, continuous close will result in a system bypass.
- ✓ If the DTM10-301 has the digital condition monitoring function, the Trip/Multi and COM pins are used for phase reference input. Moreover, the DTM10-301 won't provide Multiply Alarm function anymore, so you should set Multiply Alarm property to "None" by DTM-CFG software.
- ✓ If Full Scale of DTM10-502 is phase reference output (A6), Buffer output terminal will provide phase reference signal.
- ✓ If Full Scale of DTM10-502 is phase reference output for digital condition monitoring (A7), Trip/Multi terminal provides the phase reference signal for the DTM10-201, DTM10-301, DTM20-101 or DM200. A DTM10-502 can provide the phase reference signal for up to 6 DTMs or DM200s.

DTM-CFG Configuration and Calibration Software

DTM-CFG is the configuration and calibration software used to configure all DTM modules. DTM-CFG works with Windows XP or Windows 2000 operating system.

DTM-CFG can be connected to the DTM modules with the interface of a RS485-USB cable kit.

DTM-CFG combined with the DTM96 allows the user to remotely interface with 32 DTMs networked together in the field.

DTM-CFG Features

- ✓ **DTM Configuration**
- ✓ **DTM Calibration**

Specifications

Module Configuration:

- ✓ Module type selection
- ✓ Modbus ID address, Range
- ✓ Communication baud rate
- ✓ Auto manual search of communication port
- ✓ English or metric selection
- ✓ Password and security

Operation Configuration:

- ✓ Sensor and sensitivity selection
- ✓ Measurement unit selection
- ✓ Full-scale
- ✓ Dual-alarm set-points, time delay, latching
- ✓ Relay energized/de-energized. Relay programmed to Alert or OK
- ✓ OK set-points

Maintenance Calibration:

- ✓ ZERO calibration, SPAN calibration
- ✓ Probe linearization calibration
- ✓ Real-time overall and status display
- ✓ Record of overall and status
- ✓ Configuration parameter save as file



Order Information

DTM-CFG-K

DTM configuration and calibration software kit includes:

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

DTM-CFG

DTM configuration and calibration software includes:

- ✓ DTM-CFG configuration and calibration software CD
- ✓ User manual

DTM-CAL

The DTM field calibration kit with probe calibration capability with 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
- ✓ User manual

Optional Accessories

RS485-USB: RS485 to USB converter with cable

RS232-USB: RS232 to USB converter with cable

DTM96: Isolated communication module

TM0540: Proximity probe field calibration kit

Accessories I

TM900A Din Rail Mounted Power Supply

The TM900A power converter is designed specifically for the DTM series transmitter-monitor. Each TM900A can supply power for up to five DTM series transmitter-monitors. Standard functions include front panel LED indicator and DC voltage adjustment, as well as protections for short-circuit, overload (constant current mode), over voltage, and over temperature.

Features

- ✓ 32mm slim design
- ✓ 89% high efficiency and low power dissipation.
- ✓ Protection: Short circuit / Overload / Over voltage/Over temperature
- ✓ Cooling by free air convection
- ✓ Installed on DIN rail TS-35/7.5 or TS-35/15
- ✓ UL508 (industrial control equipment) compliance
- ✓ Certificate: UL / CUL / TUV / CB / CE

Specifications

Electrical

AC Power Input:	100~240VAC, 47~63Hz
Power Output:	
Voltage:	24VDC
Rated Current:	3.2A
Voltage ADJ.Range:	24~28VDC
Voltage Tolerance:	± 1.0%
Ripple & Noise:	100mVp-p

Physical

Dimension:	32*125.2*102mm (W*H*D)
Weight:	0.5kg (1.0 lb)

Environmental

Temperature:	
Operation:	-30°C ~ +70°C.
Storage:	-40°C ~ +85°C.
Humidity:	
Operation:	20 ~ 95% non-condensing.
Storage:	10 ~ 95% non-condensing.

Safety & EMC

Safety Standard:
 UL508, TUV EN60950-1 approved, design refer to GL
 Withstand Voltage:
 I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC



Isolation Resistance:
 I/P-O/P, I/P-FG, O/P-FG:>100M Ohms/ 500VDC/
 25°C/ 70% RH

EMC Emission:
 Compliance to EN55022(CISPR22). EN61204-3
 Class B, EN61000-3-2, -3

EMC Immunity:
 Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024,
 EN61000-6-2 (EN50082-2), EN61204-3, heavy
 industry level, critical A, SEMI F47 approved.



Accessories II

DTM-CFG

Configuration and calibration software

DTM RS485-USB

Converter from RS485 to USB for configuration with laptop computer

DTM RS485-RS232

Converter from RS485 to RS232 for configuration with desktop computer

PCM-TCP

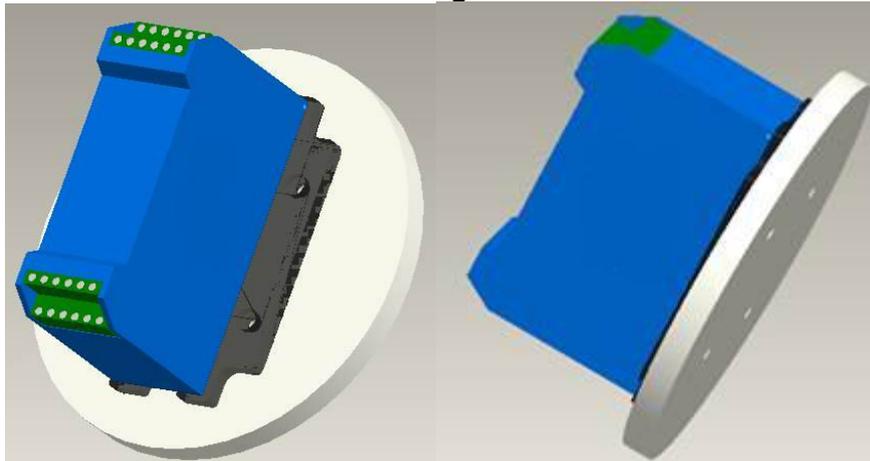
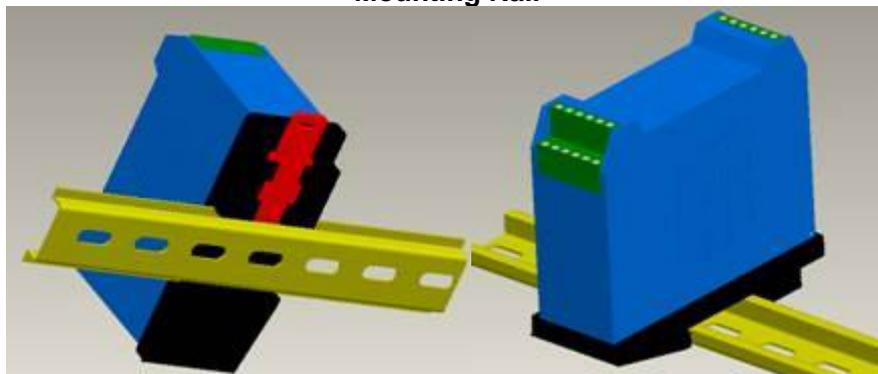
Converter from Modbus RTU to TCP for configuration with desktop computer

PCM370

PCM370 condition monitoring software is ideal for plant wide condition monitoring, and trending of overall vibration levels

PT2060/98-PC

Touch panel PC with IP65 rating. Ideal to work with PCM370 and DTM-CFG

Mounting Plate and mounting Rail:**Mounting Plate****Mounting Rail**

DTM networking and on-line condition monitoring

