

Temperature Transmitters

2-Wire Miniature Universal Temperature/Process Transmitters



ETM1



ETM2

PROGRAMMABLE

in the field with your PC and easy to use software.
Can be ordered pre-programmed from Tempco.

Temperature transmitters are used for a variety of reasons. The use of temperature transmitters can eliminate the need for long costly runs of thermocouple wire with less expensive copper signal wire. When the environment is electrically noisy, sending a 4-20 mA signal to the control panel reduces the chance of error.

Design Features:

- * Two levels of accuracy: ETM1— $\pm 0.15\%$ of span
ETM2— $\pm 0.10\%$ of span
- * Accepts 11 thermocouple types and 3- or 4-wire RTD sensors
- * Field programmable with easy to use Windows®-based configuration software and a PC
- * Sensor break monitoring, programmable for upscale or downscale
- * Full access to all features while in operation
- * Temperature linear output
- * NAMUR-compliant
- * Configuration, editing & reading without external power
- * Easy wiring through the large center hole

The **Tempco ETM Series** of 2-wire transmitters are offered in isolated, non-isolated and high precision isolated versions. They are designed to fit in a standard aluminum, iron or plastic industrial connection head, DIN size B or larger.

Additional Design Features for the Isolated Version

- * Fully universal, linearized and isolated 3/4 wire RTD, T/C, mV and Ohm
- * Sensor and system error correction
- * Low sensor isolation detection
- * Simplified loop check up with calibration output

The **ETM Transmitters** are built using surface mount components and employ digital technology with non-volatile memory to retain the configuration after programming and the cable is removed.

Ordering Code: ETM 1 2 3 4 5 6

Isolation BOX 1

- 1 = Non-Isolated
- 2 = Isolated

Input Signal BOX 2

- R = RTD-Pt100
- S = RTD-D100
- H = RTD-Pt100
- T = Thermocouple
- M = mV (ETM2 only)
- P = Potentiometer (ETM2 only)

BOX 3

If **thermocouple input**, enter thermocouple **Type Code**; (if not enter 0)

- J = J thermocouple
- K = K thermocouple
- E = E thermocouple
- B = B thermocouple
- C = C thermocouple
- L = L thermocouple
- N = N thermocouple
- R = R thermocouple
- S = S thermocouple
- T = T thermocouple
- U = U thermocouple

Minimum Range BOX 4

In degrees (t/c and RTD)
mV & ohms (isolated only)
Backfill unused boxes with 0's
Example: 10° = 0010

Maximum Range BOX 5

In degrees (t/c and RTD)
mV & ohms (isolated only)
Backfill unused boxes with 0's
Example: 950° = 0950

Units: BOX 6

- F = °F
- C = °C
- M = mV Ohms (isolated only)
- R = Ohms (isolated only)

 **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

2-Wire Miniature Universal Temperature/Process Transmitters

ETM Specifications

Parameter	ETM1 Non-Isolation	ETM2 Isolation
Typical Accuracy:	±0.15% of span	±0.10% of span
Galvanic Isolation:	No	1500 Vac, 1 min.
Thermocouple Types:	J, K, E, B, C, L, N, R, S, T, U	
RTD Types, 3 & 4 wire:	PT100 IEC α=0.00385, PT1000 IEC α=0.00385 and others; Consult Tempco	
Input mV:	N/A	-10 to +500 mV
Potentiometer / Resistance:	N/A	3/4 wire, 0-2000 Ω
Maximum T/C Wire Resistance:	500 Ω	500 Ω
Power Supply:	6.5 to 36 Vdc	6.5 to 36 Vdc
Output	4 to 20mA, 20-4mA	4 to 20mA, 20-4mA
Linearity Thermocouple:	±0.2%	±0.2%
Linearity RTD:	±0.1%	±0.1%
Sensor Break Monitoring:	Upscale or Downscale, Programmable	
Minimum Span Calibration		
T/C:	2 mV	2 mV
RTD:	18°F/10°C	18°F/10°C
Potentiometer:	N/A	10 Ω
Temperature Operation & Storage:	-40° to +185°F/-40° to +85°C	
Relative Humidity:	0 to 95%, non-condensing	
Mounting:	DIN B connection head or larger	
Protection: Housing/Terminals:	IP 65/IP 00	IP 50/IP 10

Common Pre-Programmed Miniature Temperature Transmitters

Part Number	Version/ Isolation	Input	Range Zero	Span	Unit
ETM20103	ETM1/no	K tc	0	200	°F
ETM20104	ETM1/no	J tc	0	200	°F
ETM20105	ETM2/yes	RTD	0	200	°F
ETM20106	ETM1/no	K tc	0	500	°F
ETM20107	ETM1/no	J tc	0	500	°F
ETM20108	ETM2/yes	RTD	0	400	°F
ETM20109	ETM1/no	K tc	0	200	°C
ETM20110	ETM1/no	J tc	0	200	°C
ETM20111	ETM1/no	K tc	0	400	°C
ETM20112	ETM1/no	J tc	0	400	°C

Un-Programmed Miniature Transmitters

ETM20001	For Non-Isolated Version
ETM20002	For Isolated Version

Universal Field Programming Kit

For programming Tempco transmitters for sensor type and range. Includes USB Interface and, all required cables and software. Includes hard carrying case. Connects to a USB port on the PC. Compatible with 32 or 64 bit Windows XP (SP2+), Vista, Windows 7, 8, 8.1, or 10.

Part Number: **ETM90006**

Lite Field Programming Kit

For programming ETM20001, ETM20002, miniature head mounted non-isolated and isolated transmitters for sensor type and range. Includes USB Interface and all required cables and software. Includes storage bag. Connects to a USB port on the PC. Compatible with 32 or 64 bit Windows XP (SP2+), Vista, Windows 7, 8, 8.1, or 10.

Part Number: **ETM90007**



Note: For dimensions and wiring information, see page 12-48.

All Items Available from Stock

Ordering Information

Order a common unit by part number from the table or create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements and a part number will be assigned, or choose a pre-assigned configuration.

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

Temperature Transmitters

2-Wire Panel Rail Mount Universal Temperature/Process Transmitters



ETR1



ETR2

PROGRAMMABLE

in the field with your PC and easy to use software.
Can be ordered pre-programmed from Tempco.

Design Features:

- * Two levels of accuracy: ETR1— $\pm 0.15\%$ of span
ETR2— $\pm 0.10\%$ of span
- * Accepts 11 thermocouple types and 3- or 4-wire RTD sensors
- * Field programmable with easy to use Windows®-based configuration software and a PC
- * Sensor break monitoring, programmable for upscale or downscale
- * Full access to all features while in operation
- * Temperature linear output
- * NAMUR-compliant
- * Configuration, editing & reading without external power
- * Easy wiring with captive clamp style wire connections

Temperature transmitters are used for a variety of reasons. The use of temperature transmitters can eliminate the need for long costly runs of thermocouple wire with less expensive copper signal wire. When the environment is electrically noisy, sending a 4-20 mA signal to the control panel reduces the chance of error.

The **Tempco ETR Series** of 2-wire transmitters is offered in non-isolated and isolated versions. They are designed to fit directly on a standard 35 mm DIN rail.

Additional Design Features for the Isolated Version

- * Fully universal, linearized and isolated 3/4 wire RTD, T/C, mV and Ohm
- * Sensor and system error correction
- * Low sensor isolation detection
- * Simplified loop check up with calibration output

The **ETR Transmitters** are built using surface mount components and employ digital technology with non-volatile memory to retain the configuration after programming and the cable is removed.

Ordering Code: ETR 1 2 3 4 5 6

Isolation BOX 1

- 1 = Non-Isolated
- 2 = Isolated

Input Signal BOX 2

- R = RTD-Pt100
- S = RTD-D100
- H = RTD-Pt100
- T = Thermocouple
- M = mV (ETM2 only)
- P = Potentiometer (ETR2 only)

BOX 3

If **thermocouple input**, enter thermocouple **Type Code**; (if not enter 0)

- J = J thermocouple
- K = K thermocouple
- E = E thermocouple
- B = B thermocouple
- C = C thermocouple
- L = L thermocouple
- N = N thermocouple
- R = R thermocouple
- S = S thermocouple
- T = T thermocouple
- U = U thermocouple

Minimum Range BOX 4

In degrees (t/c and RTD)
mV & ohms (isolated only)
Backfill unused boxes with 0's
Example: 10° = 0010

Maximum Range BOX 5

In degrees (t/c and RTD)
mV & ohms (isolated only)
Backfill unused boxes with 0's
Example: 950° = 0950

Units: BOX 6

- F = °F
- C = °C
- M = mV Ohms (isolated only)
- R = Ohms (isolated only)

 **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

2-Wire Panel Rail Mount Universal Temperature/Process Transmitters

ETR Specifications

Parameter	ETR1 Non-Isolation	ETR2 Isolation
Typical Accuracy:	±0.15% of span	±0.10% of span
Galvanic Isolation:	No	1500 Vac, 1 min.
Thermocouple Types:	J, K, E, B, C, L, N, R, S, T, U	
RTD Types, 3 & 4 wire:	PT100 IEC α=0.00385, PT1000 IEC α=0.00385 and others; Consult Tempco	
Input mV:	N/A	-10 to +500 mV
Potentiometer / Resistance:	N/A	3/4 wire, 0-2000 Ω
Maximum T/C Wire Resistance:	500 Ω	500 Ω
Power Supply:	8 to 32 Vdc	8 to 30 Vdc
Output	4 to 20mA, 20-4mA	4 to 20mA, 20-4mA
Linearity Thermocouple:	±0.2%	±0.2%
Linearity RTD:	±0.1%	±0.1%
Sensor Break Monitoring:	Upscale or Downscale, Programmable	
Minimum Span Calibration		
T/C:	2 mV	2 mV
RTD:	18°F/10°C	18°F/10°C
Potentiometer:	N/A	10 Ω
Temperature Operation & Storage:	-4° to +158°F/-20° to +70°C	
Relative Humidity:	0 to 95%, non-condensing	
Mounting:	DIN, 35 mm (for DIN rail see page 13-95)	
Protection: Housing/Terminals:	IP 20	IP 20

Common Pre-Programmed Rail Mount Temperature Transmitters

Part Number	Version/Isolation	Input	Range Zero	Span	Unit
ETR20101	ETR1/no	K tc	0	200	°F
ETR20102	ETR1/no	J tc	0	200	°F
ETR20103	ETR2/yes	RTD	0	200	°F
ETR20104	ETR1/no	K tc	0	500	°F
ETR20105	ETR1/no	J tc	0	500	°F
ETR20106	ETR2/yes	RTD	0	400	°F
ETR20107	ETR1/no	K tc	0	200	°C
ETR20108	ETR1/no	J tc	0	200	°C
ETR20109	ETR1/no	K tc	0	400	°C
ETR20110	ETR1/no	J tc	0	400	°C

Un-Programmed Rail Mount Transmitters

ETR20001	For Non-Isolated version
ETR20002	For Isolated version

Universal Field Programming Kit

For programming Tempco transmitters for sensor type and range. Includes USB Interface and, all required cables and software. Includes hard carrying case. Connects to a USB port on the PC. Compatible with 32 or 64 bit Windows XP (SP2+), Vista, Windows 7, 8, 8.1, or 10.

Part Number: **ETM90006**

Lite Field Programming Kit

For programming ETR20001, ETR20002, DIN rail mount non-isolated and isolated transmitters for sensor type and range. Includes USB Interface and all required cables and software. Includes storage bag. Connects to a USB port on the PC. Compatible with 32 or 64 bit Windows XP (SP2+), Vista, Windows 7, 8, 8.1, or 10.

Part Number: **ETM90007**



Note: For dimensions and wiring information, see page 12-49.

All Items Available from Stock

Ordering Information

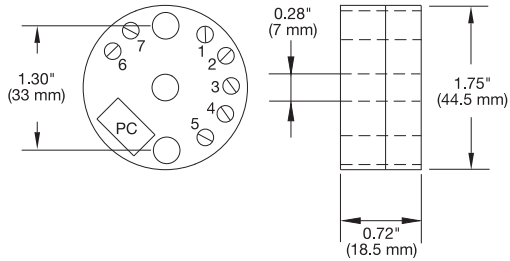
Order a common unit by part number from the table or create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements and a part number will be assigned, or choose a pre-assigned configuration.

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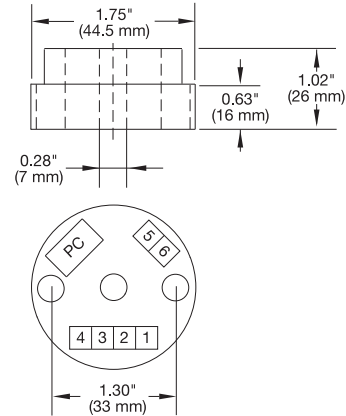
Temperature Transmitters

Wiring Diagrams for 2-Wire Miniature Head Temperature/Process Transmitters

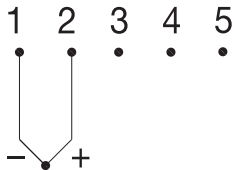
ETM1 Non-Isolated



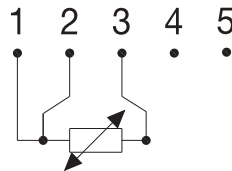
ETM2 Isolated



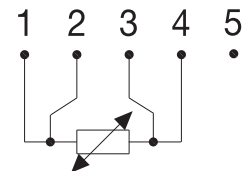
Input Connections for ETM1 and ETM2



Thermocouple

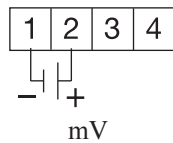


RTD- PT100, PT1000
3-wire

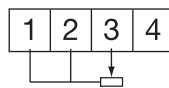


RTD- PT100, PT1000
4-wire

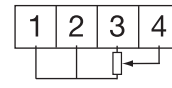
Additional Input Connections for Isolated ETM2



mV

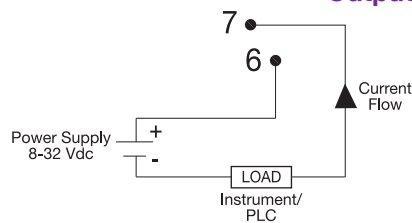


Potentiometer 3-wire

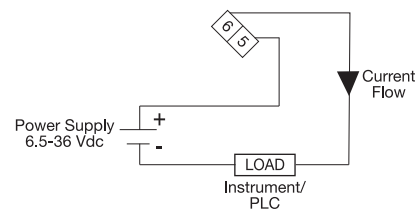


Potentiometer 4-wire

Output Connections for ETM1 and ETM2



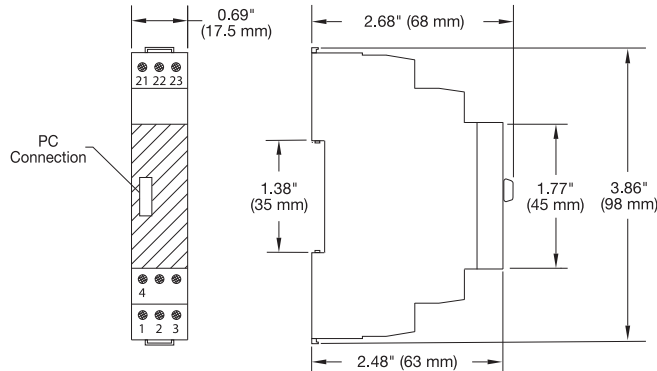
ETM1



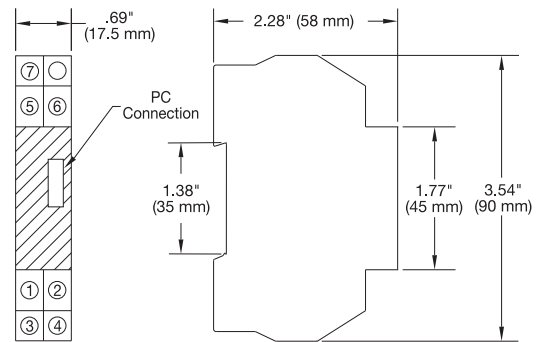
ETM2

Wiring Diagrams for 2-Wire DIN Rail Mount Temperature/Process Transmitters

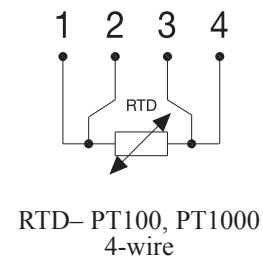
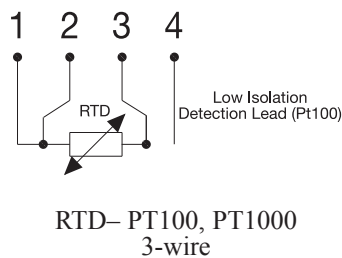
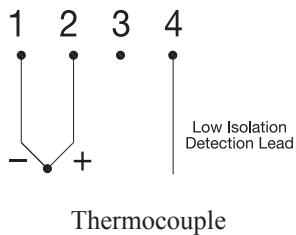
ETR1 Non-Isolated



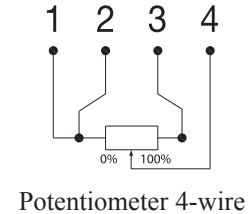
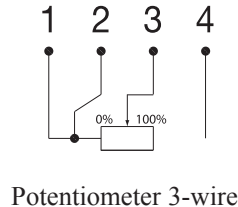
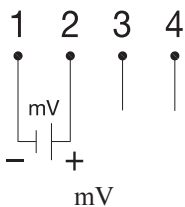
ETR2 Isolated



Input Connections for ETR1 and ETR2



Additional Input Connections for Isolated ETR2



Output Connections for ETR1 and ETR2

