

ATE-2 Handheld Calibrator

AM2-TC1 QUICK-SELECT OPTIONAL THERMOCOUPLE MODULE FEATURES

- Allows ATE-2 to measure temperature with a thermocouple
- Pre-programmed to accept 8 most common thermocouple types
- Selectable units of measure: Celsius, Fahrenheit, Kelvin, Rankine and millivolts
- Reference junctions: automatic internal or manual external



With the AM2-TC1 interface module installed, the ATE-2 contains programming to read types J, K, T, E, R, S, B and N thermocouples and display the measurement in units of temperature measure or millivolts. Other types of thermocouples may also be read by using the direct millivolt readout.

THERMOCOUPLE TEMPERATURE MODULE SPECIFICATIONS

Part Number:

AM2-TC1

Unit of Measure (selectable): °C, °F, °K, °R and millivolts

Reference Junction (selectable):

Automatic Mode: The AM2-TC1 module incorporates an internal resistor/thermistor based reference junction, which may be selected for use in the temperature readout mode.

Manual Mode: An external reference junction may be used in place of the internal junction. External reference junctions may be applied in the temperature or direct millivolt readout modes.

Resolution Reading in Temperature Units (selectable):

1, .1 or .01 degrees. "Auto" mode selection that allows the ATE-2 to automatically configure the readout to the highest significant resolution (resolution closest to the tolerance) for the thermocouple type selected.

Resolution Reading in Millivolts: .001 millivolts

Thermocouple Connection (to interface module):

Requires a "miniature thermocouple connector" (Omega type SMP), specifically matched to the thermocouple type to be used. These connectors may be purchased as an accessory under the following part numbers:

HOW TO ORDER THERMOCOUPLE CONNECTOR

Part No.	Description
828X161-01	Type J Connector
828X161-02	Type K Connector
828X161-03	Type T Connector
828X161-04	Type E Connector
828X161-05	Type R Connector
828X161-06	Type S Connector
828X161-07	Type B Connector
828X161-08	Type N Connector

SYSTEM ACCURACY (READING IN TEMPERATURE UNITS):

Includes the base unit and AM2-TC1 interface module. (Does not include inaccuracy of the thermocouple device. Consult thermocouple manufacturer or ANSI MC96.1 for thermocouple accuracy specifications. Typical inaccuracies range from ±1 to ±2.2°C.)

Conversion Factors to convert °C specifications to other units of measure:

To convert from C to F; $F = (1.8 \times C) + 32$

To convert from C to K; $K = C + 273.15$

To convert from C to R; $R = (1.8 \times C) + 427.67$

Additional Thermocouple Information on the following page.

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THERMOCOUPLE SPECIFICATION TABLE

Thermocouple Type	Measurement Range (°C)	Accuracy @ 25°C (Not Including Internal Reference Junction) Expressed as ±°C	Accuracy @ 25°C (Including Internal Reference Junction) Expressed as ±°C	Max Additional Error Due to Ambient Temperature Deviation From 25°C. Expressed as Additional °C Deviation from 25°C
J	-210 to -151 -150 to 1200	0.7 0.3	1.1 0.4	0.02 0.01
K	-240 to -201 -200 to -101 -100 to 999	1.5 1.0 0.5	2.2 1.5 0.8	0.05 0.03 0.02
T	-250 to -201 -200 to -101 -100 to 400	1.5 0.8 0.5	2.2 1.2 0.8	0.05 0.03 0.02
E	-250 to -201 -200 to -101 -100 to 400	1.2 0.6 0.3	2.0 1.1 0.6	0.04 0.02 0.01
R & S	-50 to 299 300 to 1768	3.4 1.2	3.6 1.3	0.10 0.04
B	100 to 199 200 to 499 500 to 999 1000 to 1820	14.0 5.0 3.0 1.2	14.0 5.0 3.0 1.2	0.44 0.16 0.08 0.04
N	-250 to -226 -225 to -101 -100 to 1300	4.3 2.1 1.0	5.7 2.8 1.4	0.14 0.07 0.02

AMBIENT TEMPERATURE EFFECT:

To calculate, multiply degrees deviation from 25°C times the value listed in the far right column of the listed table. Only applied when using the internal reference junction, within the ambient window of 0-50°C.

TO CALCULATE TOTAL SYSTEM/MEASUREMENT ACCURACY:

Accuracy = System Accuracy @ 25°C + System Ambient Temperature Effect + Inaccuracy of Thermocouple Device

SYSTEM ACCURACY (BASED ON DIRECT MILLIVOLT READING FROM THERMOCOUPLE):

Includes the base unit and AM2-TC1 interface module. (Does not include inaccuracy due to the thermocouple device. Reference junction not applicable to direct millivolt readings.)

Input Range of Module	Accuracy @ 25°C	Max. Additional Error Due to Ambient Temperature Deviation From 25°C. Expressed As Additional Millivolt Error Per Each °C Deviation From 25°C
10 to 100mV	±0.01 to 100mV	.001