



Transmation

Easy to use

The Transmation CheckMate 400 checks, calibrates and measures all the thermocouple devices in your plant. Toggle the display between °C and °F or lock it for full time use of either temperature scale.

Simulate temperature and measure thermocouples directly with the pocket sized CheckMate 400.

The CheckMate 400 is easy to use. Select a thermocouple type and use the decade push-buttons for the precise output you need.

Source thermocouple

Calibrate recorders, digital indicators, computer inputs or any other instruments that measure thermocouples. Easily set any value to 1° C or F with the intuitive UP and DOWN pushbuttons. Separate buttons for each digit make adjustments fast and easy.

Recall output settings

The "Quik-Chek" pushbuttons provide rapid checking of any three points in each range. Quik-Chek settings remain in memory even when the CheckMate 400 is powered off.

Measure thermocouple probes

Verify proper sensor function and measure temperatures by attaching a thermocouple to the CheckMate 400. Toggle the display between °C and °F or configure it for full time use of either temperature scale.

Display the present reading, maximum or minimum by pressing the READ, MAX or MIN pushbuttons to quickly check how much the temperature has varied or the stability of control.

Thermocouple Calibrator CheckMate™ 400



- Calibrate thermocouple instruments
 - Check transmitter inputs
 - Simulate sensors into controllers and indicators
 - Read thermocouple probes
- Four built-in T/C types
 - Types J, K, T, E and millivolt
 - Built-in cold junction compensation
- Compact and low cost
 - The CheckMate 400 fits easily into your pocket and budget.
- Easy to use
 - One touch to set the output & function
- Accuracy to $\pm 0.025\%$
 - Within $\pm 1^\circ\text{C}$
- Long lasting alkaline batteries
 - Four "AA" Alkaline cells can provide months of typical use
- Settable "Quik-Chek®" pushbuttons
 - Set any HI and LO output in each range

POWER

Turn-on

Each time you turn on the CheckMate 400 the LCD will display all segments for about 1 second. It then displays the most recently selected source or read setting.

Source

The three Quik-Chek outputs will be the same as previously stored. Each time a different type is selected, the three Quik-Chek outputs will be recalled.

Read

The CheckMate 400 is ready to measure the same signal as the last time it was turned on and will automatically update the MAX & MIN readings for recall at any time.

Selecting ranges

For some functions there are two or more ranges or scales. Press the RANGE/TYPE pushbutton to scroll through the ranges and scales.

Turn-off

Press the POWER push-button to turn the CheckMate 400 off. If AUTO-OFF is enabled, the Checkmate 400 will turn itself off after 30 minutes of inactivity.

Autocal

To maintain accuracy, the CheckMate 400 periodically recalibrates its measuring circuitry against internal references. The word CAL will appear on the display for less than 2 seconds.

Changing batteries

Low battery is indicated by BAT on the display. Approximately four hours of operation remain before the LCD blanks and CheckMate 400 shuts itself down. Turn the CheckMate 400 off, loosen the captive screw securing the battery compartment and lift off the cover from the bottom of the case. The four "AA" batteries are easily removed and replaced (alkaline supplied and recommended). Replace the battery compartment cover and tighten the screws.

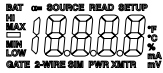
Auto-off

CheckMate 400 can be set up to turn itself off after 30 minutes of inactivity. The internal timer is reset to 30 minutes each time a pushbutton is pressed.

Default settings – Auto-off

CheckMate 400 may be restored to the factory settings. This will reset the HI and LO "Quik-Chek" memories. Prompts also guide you for selection of Auto-Off and temperature scales.

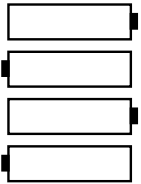
- 1) Press and hold the STORE/RESET push-button while turning the CheckMate 400 on.
- 2) Keep pressing the push-button until the display flashes (about 5 seconds) then release.
- 3) The words BAT and ON will appear on the display indicating that AUTO-OFF is selected.
- 4) To toggle the AUTO-OFF function on and off press the RANGE/TYPE push-button and the words ON and OFF will display.
- 5) After five seconds the CheckMate 400 will automatically store your choice and the °C & °F symbols will flash on the display.
- 6) Press the RANGE/TYPE push-button to make your selection. With °C flashing the unit will display only in °C, with °F flashing the unit will display only in °F and with both flashing you can select °C and °F for each RTD type. °C/°F is selected if no push-buttons are pressed.
- 7) After five seconds the CheckMate 400 will begin normal operation. Or you may press the STORE/RESET button to accept your choice and begin operation.



RANGE/TYPE

POWER

CAL



HI / MAX

SET / READ

LO / MIN

STORE/RESET

HI / MAX

SET / READ

LO / MIN

HI / MAX

SET / READ

LO / MIN

STORE/RESET



Source thermocouple

Select source by pressing the SOURCE/READ pushbutton until the word SOURCE appears on the LCD display. To change the output value press the UP or DOWN pushbutton corresponding to the digit being displayed. To ramp the output press and hold any UP or DOWN pushbutton. The display will continue to change in increments corresponding to the digit being changed and will automatically carry up and down until the limits of the range are reached. This function operates in all three output positions (HI, SET & LO).

Storing Quik-Chek outputs

- 1) Press HI or LO
 - 2) Press the UP/DOWN keys to desired value
 - 3) Press the STORE push-button
- The LCD will flash once to show that the value was saved

If a value is in the SET position and you want that value stored in HI or LO, press and hold the STORE push-button, then press the HI or LO pushbutton. The display will flash once to indicate the value has been stored. Then release both pushbuttons.

Recall Quik-Chek outputs

When you need a stored value just press the HI or LOW Quik-Chek pushbutton. Any value for the selected range may be stored in HI & LO. The CheckMate 400 remembers the HI, LO and SET values for each function with the power on or off. Each time a different function is selected, the last three Quik-Chek values for that function will be recalled.

Open thermocouple

Five dashes (-----) will appear on the LCD if there is an open sensor or if the sensor has a high resistance which indicates that the sensor is burning out.

Read thermocouples

Select read by pressing the SOURCE/READ pushbutton until the word READ appears on the LCD display. The READ functions measure the desired signal.

Min/Max

To read the maximum or minimum input since read mode was entered, simply press the MAX or MIN pushbutton. The value will appear on the LCD along with the word MAX or MIN. The MAX/MIN values are automatically updated and may be viewed at any time without disturbing the other values.

Restarting Min/Max

Pressing the STORE/RESET push-button will cause the CheckMate 400 to store the present reading into the MAX and MIN memories. Upon releasing the STORE/RESET push-button the CheckMate 400 will resume reading the input and update the MAX & MIN values as the measured signal changes.

Out of range signals

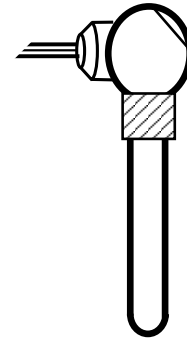
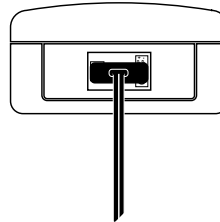
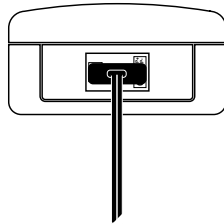
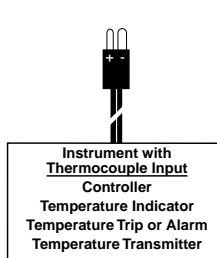
Signals above or below those available for the currently selected range will be indicated by Or and Ur on the display.

Calibrate thermocouple instruments

Choose this function to simulate a thermocouple signal into any instrument requiring a thermocouple input. The output of the CheckMate 400 is automatically cold junction compensated.

- 1) Disconnect the thermocouple from the instrument being calibrated.
- 2) Press the POWER push-button, then press the SOURCE/READ pushbutton until SOURCE is displayed.
- 3) Press the RANGE/TYPE push-button until the desired T/C type and temperature scale appear.
- 4) Use a thermocouple wire and corresponding miniature thermocouple connector to connect the CheckMate 400 to the instrument.

Output temperature is adjustable with the UP and DOWN push-buttons. Span and zero outputs are available by using the HI and LO Quik-Chek push-buttons to recall your stored settings.



Measure thermocouple sensors

Choose this function to read a thermocouple. The input of the CheckMate 400 is automatically cold junction compensated.

- 1) Disconnect the thermocouple from any instrument.
- 2) Press the POWER push-button, then press the SOURCE/READ pushbutton until READ is displayed.
- 3) Press the RANGE/TYPE push-button until the desired T/C type and temperature scale appear.
- 4) Use the proper thermocouple wire and corresponding miniature thermocouple connector to connect the CheckMate 400 to the thermocouple.

Display the present reading, maximum or minimum by pressing the READ, MAX or MIN pushbuttons.

Signals above or below those available for the currently selected range will be indicated by Or and Ur (Overrange and Underrange) on the display.

Product Specifications

General	
90 day accuracy	$\pm(0.025\%$ of Full Scale + 1 LSD)*
1 year accuracy	$\pm(0.05\%$ of Full Scale + 1 LSD)
Warm up time	10 seconds to specified accuracy, 2 minutes to maximum accuracy
Temperature effect	$\pm 0.01\%/^{\circ}\text{C}$ based on 23°
Batteries	Four "AA", (R6) batteries (Alkaline supplied and recommended)
Battery life	Nominal 40 hours
Low battery indication	"BAT" indication on the display at approximately 4 hours left
Overvoltage protection	Protected to 120V AC/DC for 30 seconds
Operating temperature range	-5 to +130 °F (-20 to +55°C)
Storage temperature range	-13 to +130°F (-25 to +55°C)
Relative humidity	10 to 90%, non-condensing for 24 hours from 0 to 35°C
Overall size	158.1 x 83.1 x 49.3 mm (6.23 x 3.27 x 1.94 inches)
Weight	0.34 kg (12 oz)
Thermocouple source	
Ranges	Type J -100 to 1200°C; -148 to 2192°F Type K -100 to 1371°C; -148 to 2500°F Type T -100 to 400°C; -148 to 752°F Type E -100 to 1000°C; -148 to 1832°F
Thermocouple accuracy	$\pm 1^{\circ}\text{C}$ for temperatures above 0°C $\pm 2^{\circ}\text{C}$ for temperatures below 0°C
Cold junction accuracy	$\pm 1^{\circ}\text{C}$
Cold junction effect	within 0.05°C per °C change
Output impedance	<0.3 ohms
Source current	>8.0 mA
Read thermocouple	
Ranges and accuracy	Same as for Thermocouple source
Input impedance	> 1Meg ohm
Open thermocouple detection	450 millisecond pulse. Nominal threshold 10K ohms

*Typical 90 day accuracy can be estimated by dividing the 1 year % of full scale accuracy by 2. Additions to the specification, such as + 1 LSD, remain constant.

Warranty

Transmation products are warranted to be free from defects in material and workmanship (excluding fuses, batteries and leads) for a period of one year from the date of shipment. Warranty repairs can be obtained by returning the equipment prepaid to our factory. Products will be replaced, repaired, or adjusted at our option. *Transmation gives no other warranties, including any implied warranty of fitness for a particular purpose.* Also, Transmation shall not be liable for any special, indirect, incidental or consequential damages or losses arising from the sale or use of its products.

Ordering information

CheckMate 400 Thermocouple Calibrator

Part No.

23409T

Included with each CheckMate 400 are:

T/C wires for types J, K, T and E, 1 meter long, terminated at one end with a miniature thermocouple connector

Carrying Case

Transmation, Inc.

PO Box 837, Everett, WA 98206

1520 75th Street SW, Everett, WA 98203

For more information:

U.S.A. (800) 260-5492

Fax (800) 265-2863

Service fax (425) 446-6331

E-mail: sales@transmation.com

Web: www.transmation.com

PN 1887113 Rev A April 2002

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