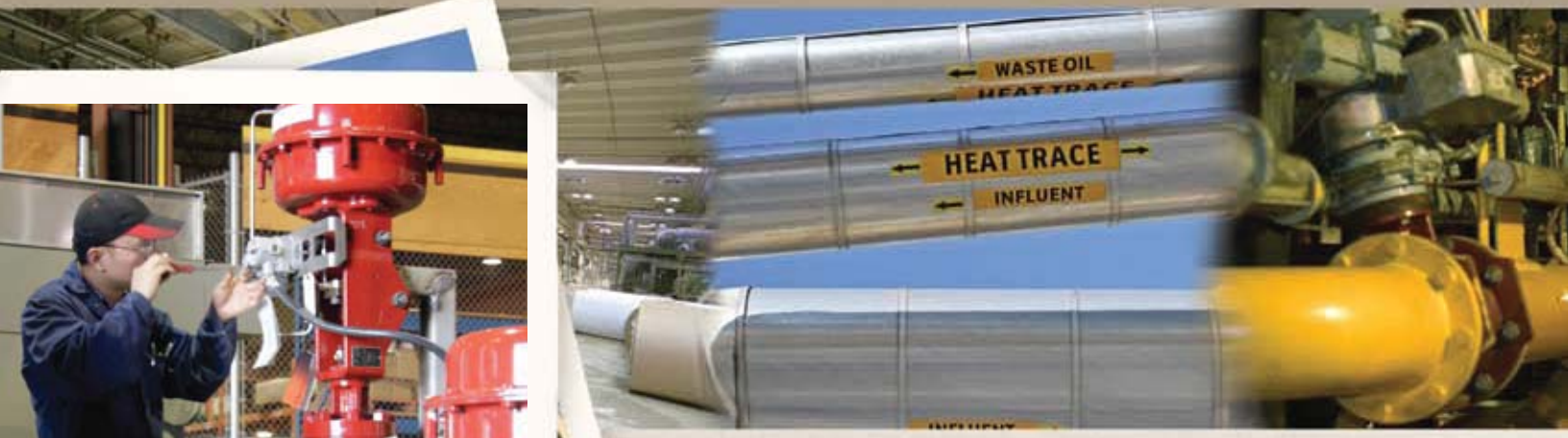

Electronic Handheld Calibrators

Now more than ever, there is an increased focus on driving down costs by calibrating instruments on a fixed schedule. By adhering to this preventative maintenance practice, technicians limit the amount of failures that occur in the field therefore reducing downtime.

Calibrators used to perform this work must be more accurate than the instruments being tested. The normal accepted industry standard of TUR (Test Uncertainty Ratio) is 4:1, meaning the calibrator must be at least 4 times more accurate than the instrument under test.

Whether used in a controlled lab environment or outside in 30°F weather, Meriam's calibrators maintain the 4:1 ratio and are among the industry's best in accuracy over temperature. Choose the accuracy that best works for your application: either in percentage of full scale or valid reading throughout the entire operating range. From simulating and measuring a 4-20mA instrument loop or calibrating a temperature transmitter - Meriam has got you covered.

PICTURE. PERFECT. PRECISION.

With the M130, you get the best accuracy with the best value – our competitors don't even come close:

Meriam:
± 0.005% Reading ± 6µ

Closest Competitor:
± 0.008% Reading ± 6µ

M130

The M130 was created in response to the industry's need for digital technology to verify temperature accuracy. It has the ability to measure and simulate thermocouples for the common types used throughout the industry. The M130 thermocouple calibrator features the latest component and circuit design for top of the line accuracy and stability, all in a portable handheld package. The large display with its intense green backlight makes it one of the easiest T/C calibrators to read.

Feature	Benefit
No Temperature Effect	Consistent Measurement
Record Feature	No pen & paper required in the field
Auto Ramp & Step	Rapidly test entire T/C range
Backlight	Readability
Size	Versatility
Accuracy	Best in Class
Off Timer	Conserve battery life

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M334

Meriam's M334 4-20 Milliamp Loop Calibrator can perform all the required maintenance and calibration tasks of virtually any 4-20mA loop.

In the example below, the M334 can be used anywhere temperature, pressure and flow applications are present in the production of canned corn. Imagine what it can do for your applications:

Process Control for Corn

Steel
Mining Ore
Mining Coal
Trucks
Fuel*
Shipment to Smelter

At Smelter
Weighing System
Electricity*
Fuel*
Temperatures
Pressures
Flow
Motor Speed
Shipment to Fabricator

At Fabricator
Electricity*
Fuel*
Temperatures
Pressures
Motor Speed

Corn
Seed
Fertilizer
Water*
Tractor
Fuel*
Shipment to Food Processor

At Food Processor
Weighing System
Mixers
Water*
Electricity*
Fuel*
Temperatures
Pressures
Flow

Paper
Tree Planting Trucks Fuel
Logging Trucks Fuel
Shipment to Fabricator

At Fabricator
Pulping Equipment
Mixers
Water*
Electricity*
Bleach
Variable Speed Drives
Dryers
Temperatures
Pressures
Flow
Shipment of Paper to Printer

For temperature, pressure and flow - the M334 has got you covered

Corn

Can

Label

At Printer
Print Label
Shipment to Food Processor

Ink
Raw Materials
Water*
Electricity*
Fuel*
Machinery
Temperatures
Pressures
Flows

Ink
Shipment to Printer

Adhesive
Raw Materials
Water*
Electricity*
Fuel*
Machinery
Temperatures
Pressures
Flows

Adhesive

Utilities
Ore Mining
Oil & Gas Wells
Gas Refining
Generating Plants

Fresh Water Plants
Water Treatment Plants
Temperatures
Pressures
Flows
Generator Speed

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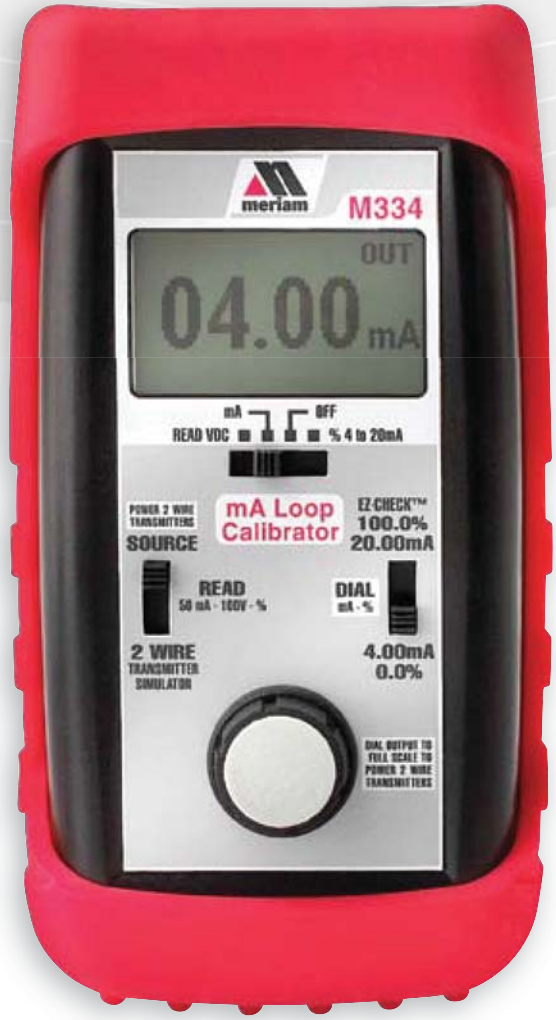

M334

4-20 Milliamp Loop Calibrator

The Meriam M334 is a state of the art, highly reliable, rugged and easy to use milliamp calibrator. It has the functions necessary to perform all the required maintenance and calibration tasks of virtually any 4-20mA loop. It provides source and read milliamp functions along with power and measure; and two wire transmitter simulations. In addition it can measure DC Voltage for troubleshooting power supplies.

The M334 is functionally equivalent to similar calibrators with many additional benefits. These improvements include better long term stability, accuracy, reliability and ruggedness including significantly improved battery life. The combined improvements allow the Meriam M334 to meet or exceed all of the expected performance and functions of similar products.

The M334 will also exceed the performance of many higher cost calibrators and meet today's most demanding requirements while maintaining the familiar, time proven reliability and ease of use of similar calibrators. This is the new standard!

M334 Advantages

All milliamp (mA) loop functions
- Source 0.00 to 24.00 mA (-25.0% to 125.0%)
- Read 0.00 to 52.00 mA (-25.0% to 300.0%)
- Simulate 2-Wire Transmitters
- Power and measure 2-Wire Transmitters

Accuracy to better than 0.025% (±½ LSD)
- Within ± 0.005 mA from 4.00 & 20.00 mA EZ-Checks

Large high contrast graphic display
- Viewable in all lighting conditions and angles

Read voltage function
- Read 0.00 to ± 99.99 VDC

EZ-Dial knob
- Easily adjust output by 0.01 mA (0.01%)

EZ-Check 3-position slide switch
- Instantly output 4.00 or 20.00 mA calibration values
- Adjustable in all 3 positions for easy valve testing
- Rugged, unbreakable with splash protection

Uses 4 standard "AA" alkaline batteries
- Battery life up to 70 hours of normal usage
- Easily accessible battery compartment

Overload protected
- 135 vrms Protection
- Fuse-less Protection from accidental misconnection

Compact, lightweight and rugged
- Small in size with heavy protective rubber boot

Rechargeable battery option available
- One hour rapid charger with four (4) NiMh Batteries
- Kit includes an AC adaptor and a car adaptor for charging on the go

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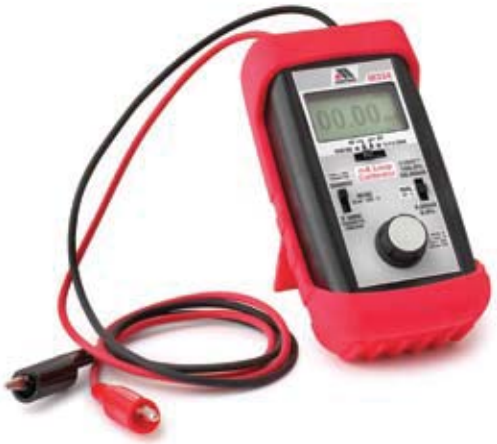
M334

meriam
A SCOTT FETZER COMPANY

4-20 Milliamp Loop Calibrator

Source/Power & Measure Two Wire Transmitters

Ranges & Resolution	0.00 to 24.00 mA Full Span or -25.0 to 125.0% of 4-20 mA
Accuracy	
EZ Check(s) at 4 & 20mA[1]	≤ ±0.025% of Span at 4.00 mA & 20.00 mA (± 0.005 mA)
0.0 to 24.00 mA	≤ ± 0.05% of 24.00 mA Span (± 0.01 mA)
Noise	≤ ± 0.005 mA of Reading
Temperature Effect	≤ ± 0.005 % / °C of FS
Loop Compliance Voltage	≥ 24 DCV @ 20.00 mA
Loop Drive Capability	1200 Ω at 20 mA for 15 hours nominal
Battery Life	Source and Power measure mode ≥ 30 hrs at 12 mA nominal



Additional Specifications

Read mA	
Ranges	0.00 to 52.00 mA Full Span OR -25.0 to 300.0% of 4-20 mA
Accuracy	
Below 24.01 mA	≤ ± 0.05 % of 24.00 mA (± 0.01 mA)
Above 24.00 mA	≤ ± 0.05 % of 52.00 mA (± 0.02 mA)
Voltage burden	≤ 2V at 50 mA
Overload/Current limit protection	54 mA nominal
Battery life	Typical ≥ 125 Hours nominal
2-Wire Transmitter Simulation	
Accuracy	Same as Source/Power & Measure
Voltage burden	≤ 2V at 20 mA
Overload/Current limit protection	24 mA nominal
Loop voltage limits	2 to 100 VDC (fuse-less protected from reverse polarity connections)
Battery life	≥ 125 hours nominal
Voltage Read	
Range and Resolution	-99.99 to +99.99 VDC Full Span (FS)
Accuracy	≤ ± 0.05 % of FS
Temperature effect	≤ ± 100 ppm/°C of FS
Input resistance	≥ 2 MΩ
Battery life	> 125 hours nominal

Specifications

Operating Temperature Range	-20 to 60ºC (-5 to 140ºF)
Storage Temperature Range	-30 to 60ºC (-22 to 140ºF)
Relative Humidity Range	10% ≤RH ≤90% (0 to 35ºC), Non-condensing 10% ≤RH ≤70% (35 to 60ºC), Non-condensing
Size	L=5.63 x W=3.00 x H=1.60 inches
Weight	12.1 ounces (including boot & batteries)
Batteries	Four "AA" Alkaline 1.5V (Duracell MN1500 or equivalent) **Optional 120 VAC 50/60 Hz AC adaptor available NiMh Rechargeable battery kit available**
Miscellaneous	Low battery indication with nominal 1 hour of operation left Over-voltage protection to 135 vrms (rated for 30 seconds) or 240 vrms (rated for 15 seconds) High contrast graphic liquid crystal display with 0.413" (10.5 mm) high digits

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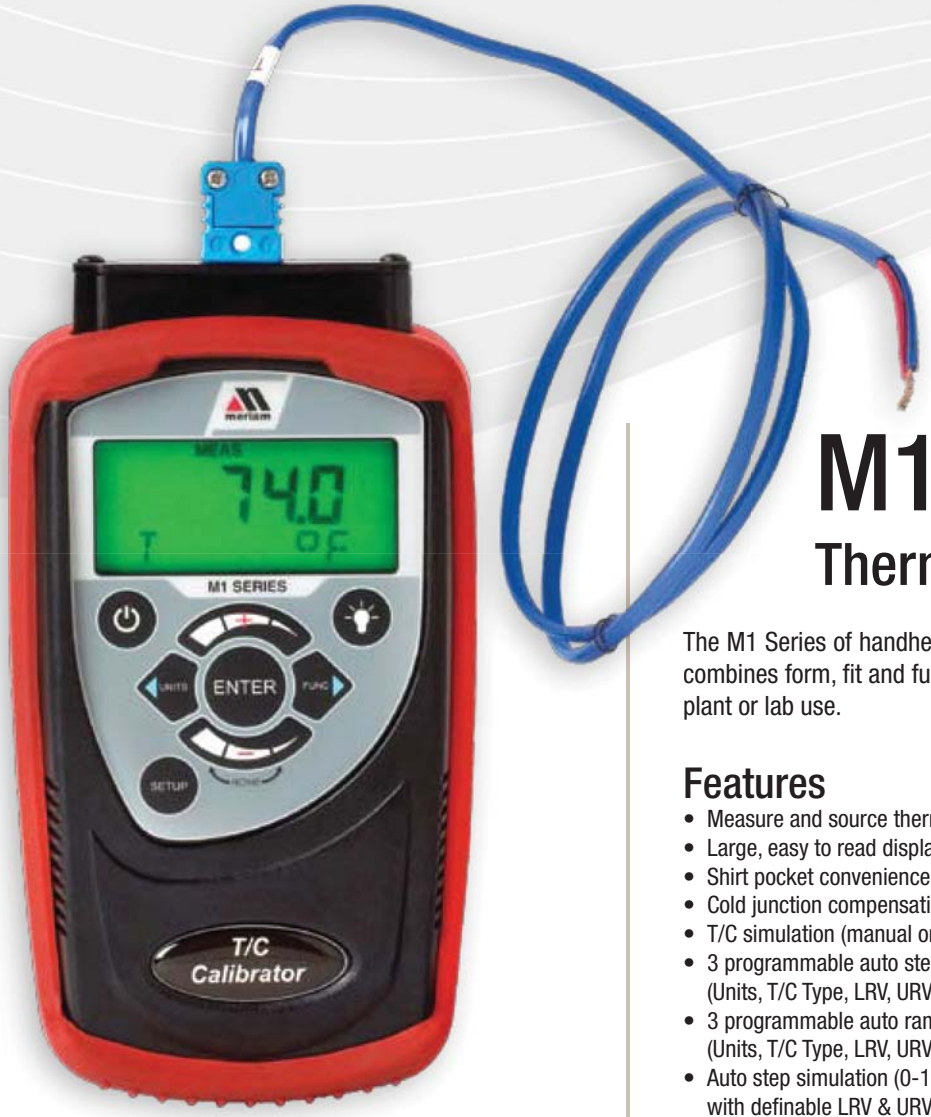

M130

Thermocouple Calibrator

The M1 Series of handheld calibrators from Meriam Process Technologies combines form, fit and function to deliver precision measurement for field, plant or lab use.

Features

- Measure and source thermocouples
- Large, easy to read display with backlight
- Shirt pocket convenience
- Cold junction compensation
- T/C simulation (manual or auto)
- 3 programmable auto step routines (Units, T/C Type, LRV, URV, STEPS & DWELL TIME)
- 3 programmable auto ramp routines (Units, T/C Type, LRV, URV, STEPS UP/DOWN TIME, DELAY)
- Auto step simulation (0-100% or 25% increments) with definable LRV & URV

M130 Advantages

Thermocouple Types
Type B, E, J, K, N, R, S, T and millivolts

Accuracy
± 0.005% Reading ± 6 µV

Engineering Units
Displays the temperature of a T/C in °C, °F, °R, K and millivolts.

Record Mode
Store up to 240 temperature measurements.
- Automatic – the current value is automatically stored every 5 seconds, for up to 20 minutes.
- Manual – the current value is stored each time the Units key is pressed, up to 240 times.

Backlight
A green backlight is user activated via the backlight key. A red backlight is automatically activated during an over-range condition.

Auto Shutoff
To conserve battery life, the M130 will automatically power off after 30 minutes of keypad inactivity.

Low Battery Indication
BAT icon is displayed when batteries require replacement. Approximately 2 hours of run time remains when BAT appears.

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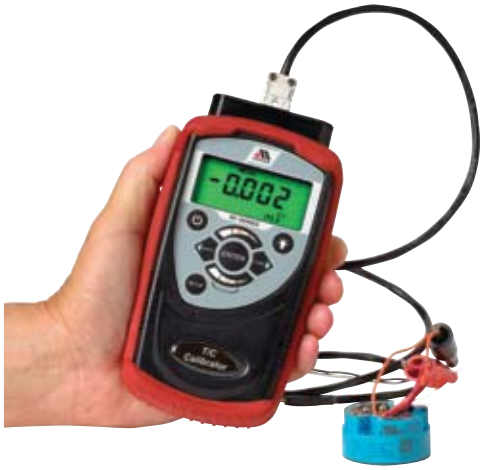
M130

Thermocouple Calibrator

Measurement & Simulation Accuracy Table

T/C Type	± 3.0°C Accuracy	± 2.0°C Accuracy	± 1.0°C Accuracy	± 0.5°C Accuracy	± 0.4°C Accuracy	± 0.3°C Accuracy	± 0.2°C Accuracy	± 0.1°C Accuracy
E						-200 to -179°C	-179 to 15°C	15 to 1000°C
J						-200 to -165°C	-165 to 1200°C	
K					-200 to 1372°C			
N						-200 to 110°C	110 to 1300°C	
T					-200 to -168°C	-168 to -86°C	-86 to 346°C	346 to 400°C
R		-50 to 27°C	27 to 736°C	736 to 1768°C				
S		-50 to 25°C	25 to 1179°C	1179 to 1768°C				
B	250 to 295°C	295 to 605°C	605 to 1301°C	1301 to 1820°C				



Ordering Information

Model Number & Description

M130 - Includes protective red rubber boot, 3 AA batteries, shorting plug and user's manual

Optional Accessories

- Z9A84 T/C Wiring kit with connectors (E, J, K, N, T, R/S, B and simulation cable)
- Z9A000053 ABS plastic carrying case
- Z1055 NIST Traceable Certificate with Data

Specifications	
Base Unit	Lightweight and ergonomic 12 ounces, 6.0" x 3.0" x 1.0"; ESD Dissipative polycarbonate
Keypad	Sealed membrane type with 12 dome style contact buttons
Power	3 AA batteries providing over 100 hours of continuous use.
Connections	Standard mini-T/C connector
Certifications	CE Mark (standard) NIST Traceable Certificate with Data (optional)
Temperature Specifications	Storage: -40°F to +185°F (-40°C to +85°C) Operating: 14°F to +122°F (-10°C to +50°C)

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