



OMEGA – Industrial Thermocouple Handheld Calibrator

Brand: Omega

Model: CL940

Description:

The OMEGA CL940 series thermocouple calibrator simulate, measure and record thermocouple. It Surpasses any device in the market the competition in the lab and on the factory floor with $\pm 0.003\%$ (Rdg) $\pm 5 \mu\text{V}$ accuracy and in ambient temperatures from 18 to 28°C (64 to 82°F).

This powerful handheld calibrator/meter allows the user to calibrate in the field as well as in the lab and offers many additional functions that translate into cost-effectiveness, improved efficiency, and long-lasting adaptability and dependability. OMEGA has rethought temperature calibrators to offer you the performance you need today without complicating your work. The new 940 Series provides laboratory grade calibrations in a highly portable package that goes to the work-site with ease. Industries that measure temperature are being pushed to achieve better results for both quality and product safety. OMEGA has responded by designing an instrument that leads its class in terms of accuracy, battery life, convenience and ease of use.

When you endeavor out into the field or plant to perform service work, you need a durable tool that you can count on. OMEGA has over 40 years of experience building handheld instruments for challenging environments. That's why we designed the 940 series to meet MIL-PRF-28800F for shock, drop and vibration tests. The keypad is a sealed design that rejects fluids and dirt without compromising tactile feedback. No matter how valuable the tool is, it is useless with dead batteries. We gave the 940 Series extraordinary 10X battery life of its competitors with 3 AA batteries so that you aren't disappointed in the field.

More rigorous calibration requirements drive the need for better tools. Tighter process controls and quality standards mean your old calibrator doesn't measure up anymore. OMEGA has designed the most accurate calibrator in a portable package. While it is tough to recreate the temperature controlled atmosphere that a lab provides, you can use a device that delivers laboratory grade precision with clear specifications that let you determine the exact level of field performance you do achieve. OMEGA's new 940 Series calibrators compensate for the ambient temperature. It will allow you to perform calibrations with confidence in diverse conditions.

A competent instrument can often imply intricacy. OMEGA engineers appreciated the simplicity and designed the 940 Series to be easier to use. Our goal was to make the operator productive when they first picked up the instrument. With one key, the user can perform a 10% / 90% calibration without understanding the manual. Another key increment 0%/25%/50%/75%/100% for rapid 5 point checks. Setting any specific temperature is equally comfortable as are step and ramp modes.

Like all OMEGA products, the 940 Series calibrators are designed, assembled and tested in the United States. OMEGA backs this durable instrument with a standard 2-year warranty to assure you that your investment is sound

Specifications:

Source / Measure Accuracy	$\pm 0.003\%$ (Rdg) $\pm 5 \mu\text{V}$	18 to 28 °C
Resolution	1 μV , 0.01°C UP TO 999.99°C AND 0.1°C \geq 1000°C	
Cold Junction Error	$\pm 0.15^\circ\text{C}$	
Range	-15mV – 85mV	
Display	5-DIGIT AUTO-RESOLUTION (0.1/0.01) WITH BACKLIGHT AND FUNCTION ANNUNCIATORS Two (2) rows of Five (5) digit LCD with separate minus sign, decimal indicators, with offset, thermocouple types KJTEBNRSGCDPLU, battery, source, read, temperature units, voltage units, percent, trend, PRST (0-19), MIN, MAX, AVG, RNG, STDEV, Transfer, symbols: Fast Ramp, Slow Ramp, Step, Bluetooth	
Connector Type	Mini-TC	
Temperature Units	°C, °F, mV	
Probe Zero Function	Resolution 0.1 °C/°F	
Reading Rate	3/sec. for Readings and TREND indicators	
Battery Type	3 AA (IEC LR6, ANSI 15) Alkaline	
Battery Life	500 Hours	
Battery Indicator	Four (4) Stage Battery Charge Indicator	
Statistics	Min, Max, Avg, Rng, and Std Dev	
Auto Off	20 minute no key pressed Auto Off. Feature can be disabled	
Power Cycle Configuration Retention	Instrument retains: Sensor Type, Temperature Unit Offset Values, Presets, Statistics, Open Lead detection status, 0%/100% span settings, and operating mode	
Internal Preset Storage	20 Preset user-determined storage registers, 0-19	
Input Current	± 50 nA maximum	
Maximum Common Mode Voltage	42 V peak to earth	1 V p-p between T1 and T2
Low Resistance Load	Less than 5 μV change in output with a 100K Ω resistance	
Operating Environment:		
Temperature	-20 to 55 °C	-4 to 131 °F
Humidity	5 to 95%, 10 to 30 °C	
Altitude	0 to 4600 m	0 to 15,092 ft.
Vibration	Random 10-500 Hz, 0.03 g ² /Hz	
Shock	30g Half Sine	
Drop	4 drops from 1 m to concrete	
Compliance, Electrical	CE, MIL-PRF-28800F Class 2	
Compliance, Substances	RoHS 2 Directive 2011/65/EU Compliant, REACH	
Dimensions	193 X 84 X 28 mm	7.6 X 3.3 X 1.1 in.
Weight	362.9 g	12.8 oz
Warranty	3-year Parts & Workmanship	
Calibration Guarantee	2 year	
Included Accessories	3 AA Batteries, Quick Start Guide, Tilt Stand/Magnetic, Calibration Report	
Optional Accessories	1. CL-300-CABLE-K-2 CABLE FOR CALIBRATOR Thermocouple Type K, 2 feet long 2. CL-300-CABLE-J-2 CABLE FOR CALIBRATOR Thermocouple Type J, 2 feet long 3. CL-300-CABLE-E-2 CABLE FOR CALIBRATOR Thermocouple Type E, 2 feet long 4. CL-300-CABLE-T-2 CABLE FOR CALIBRATOR Thermocouple Type T, 2 feet long	

CL940A/CL945A Source / Measure Accuracy* over range of 18 to 28°C (64.4 to 82.4°F) | CJC error included

C Type	°C Range	°C	TC Type	°C Range	°C
J	-200 to -160	±0.7 to ±0.5	E	-240 to -150	±1.2 to ±0.4
	-160 to -110	±0.4		-150 to -100	±0.4
	-110 to 10	±0.3		-100 to 20	±0.3
	10 to 1200	±0.2		20 to 1000	±0.2
K	-230 to -160	±1.2 to ±0.6	T	-260 to -190	±2.6 to ±0.7
	-160 to -90	±0.5 to ±0.4		-190 to -120	±0.6 to ±0.5
	-90 to 380	±0.3		-120 to -70	±0.4
	380 to 665	±0.2		-70 to 80	±0.3
	665 to 1372	±0.3		80 to 400	±0.2

* See Graphs in Manual for Detailed Accuracies

CL945A Source / Measure Accuracy* over range of 18 to 28°C (64.4 to 82.4°F) | CJC error included

TC Type	°C Range	°C	TC Type	°C Range	°C
N	-230 to -150	±1.6 to ±0.7	U T-DIN	-200 to -75	±0.8 to ±0.5
	-150 to -50	±0.5		-75 to 0	±0.4
	-50 to 215	±0.3		0 to 385	±0.3
	215 to 1300	±0.2		385 to 600	±0.2
R	-15 to 100	±1.2 to ±0.8	B	310 to 595	±1.8 to ±1.0
	100 to 240	±0.7		595 to 830	±0.9
	240 to 495	±0.6		830 to 965	±0.7
	495 to 1768	±0.5		965 to 1820	±0.6
S	-20 to 75	±1.2 to ±0.9	G	100 to 240	±1.0 to ±0.6
	75 to 150	±0.8		240 to 310	±0.5
	150 to 285	±0.7		310 to 460	±0.4
	285 to 1768	±0.6		460 to 2315	±0.3
C	0 to 60	±0.5	D	0 to 100	±0.6 to ±0.5
	60 to 2200	±0.4		100 to 230	±0.4
	2200 to 2315	±0.5		230 to 2315	±0.3
L J-DIN	-200 to -90	±0.6 to ±0.4	P	0 to 1395	±0.3
	-100 to -40	±0.4			
	-40 to 655	±0.3			
	655 to 665	±0.4			
	665 to 900	±0.3			