MICROCAL SERIES

ONE & TWO CHANNEL PALM-TOP MULTIFUNCTION CALIBRATORS

The MicroCal series of palm-top calibrators are accurate, compact, rugged, and easy to use: the ideal solution for measuring and simulating; millivolts, volts, milliamperes, ohms, thermocouples and resistance thermometers.

The modular firmware includes the algorithms for thermocouples and RTDs in accordance with IEC, DIN and JIS standards. In addition, both IPTS68 and ITS90 temperature scales are stored in the unit's memory and can be selected directly from the keypad.

All MicroCal calibrators are able to source a single step value; to program up to 7 simulation programs using up to 60 values; and to source programmable loops (start, step, end values and time) providing the ability to simulate the exact thermal characteristics of your particular system.

TTI offers the MicroCal in three different models in order to provide an instrument suitable for each application without paying for functions that you do not need. The table below outlines the capabilities of each unit. Channel 1 is for measurement and generation. Channel 2 is measurement only.



MicroCal 1+	MicroCal 10+	MicroCal 2+	
In/out 1	**In/out 1**	**In/out 1**	**In/out 2**
mV	mV	mV	30V
1V	10V	10V	mA
mA	mA	mA	
TC	TC	TC	
RTD	RTD	RTD	
Ohms	Ohms	Ohms	

- **Simulation Programs**
  Profile your process for true representation during calibration
- **Multifunction**
  Have everything you need in one portable unit, measure and simulate values at the same time in MicroCal 2+
- **High-Level Functions**
  Mathematical filters for unstable input signals, converts linear signals in technical units and linearizes quadratic signals
- **Proprietary RCJ Compensation**
  Optimal compensation at the input / output terminals

SPECIFICATIONS

INTERNATIONAL TEMPERATURE SCALE	Both IPTS 68 and ITS 90.
REFERENCE JUNCTION COMPENSATION (RJ)	Internal automatic from -5°C to +50°C (+23°F to +122°F) External programmable from -50°C to +100°C (-58°F to +212°F)
REFERENCE JUNCTION ACCURACY	± 0.15°C/°C for temperature exceeding the +18°C to +28°C (64°F to 82°F) band
TEMPERATURE STABILITY (for temperature exceeding the +18°C to +28°C (64°F to 82°F) band)	
SPAN	±0.003% of rdg/°C ±0.015% of rdg/°C (Channel 2 only)
ZERO	±0.2 µV/°C ±0.5 mV/°C or ±0.4µA/°C (Ch 2 only)
RTD AND Ω MEASUREMENT EXCITATION CURRENT	0.25 mA
RTD AND Ω SIMULATION EXCITATION CURRENT	From 0.2 to 3 mA
RTD CABLE COMPENSATION ERROR	±0.005°C/Ω of total cable resistance
RTD CABLE COMPENSATION LIMIT	Max 100Ω each wire
MA MEASUREMENT AND GENERATION	Active and Passive loop on MicroCal 2+
INPUT IMPEDANCE	>10 MΩ (>1 MΩ for 10V range and Channel 2 only)
OUTPUT IMPEDANCE (MV AND TC)	<0.5Ω with a maximum current of 0.5 mA
MAXIMUM RESISTANCE LOAD	1000 Ω at 20 mA
MAXIMUM INPUT OVERVOLTAGE	50 V
MAXIMUM INPUT OVERCURRENT	100 mA (6 mA Rtd ranges only)
ENGINEERING UNIT INDICATION	4 characters directly on the display

MICROCAL SERIES, CONTINUED

POWER SUPPLY	4 rechargeable Ni-MH
MAINS OPERATION AND BATTERY CHARGE	100V 50/60 Hz
RECHARGING TIME	Max 12 h at 90%
BATTERY LIFE	12 h on measuring mode
DISPLAY	High contrast alphanumeric LCD (Backlight on MicroCal 2+)
OPERATIVE AMBIENT TEMPERATURE	From -10°C to 50°C (15°F to 122°F)
STORAGE TEMPERATURE	From -30°C to 60°C (-22°F to 140°F)
CASE	ABS 120x60x230 mm
WEIGHT	3.3 lbs. (1.5 kg)

SENSOR OR PARAMETER		TOTAL IN/OUT RANGE	ACCURACY RANGE	RES.	ACCURACY (% OF RDG) MICROCAL 1+	ACCURACY (% OF RDG) MICROCAL 2+ & MICROCAL 10+
TC TYPE J	°C	-210 to 1200	-170 to 1200	0.1	±0.03%	±0.02%
	°F	-346 to 2192	-274 to 2192	0.1	±0.03%	±0.02%
TC TYPE K	°C	-270 to 1370	-120 to 1300	0.1	±0.03%	±0.02%
	°F	-454 to 2498	-184 to 2372	0.1	±0.03%	±0.02%
TC TYPE T	°C	-270 to 400	-120 to 400	0.1	±0.03%	±0.02%
	°F	-454 to 752	-184 to 752	0.1	±0.03%	±0.02%
TC TYPE R	°C	0 to 1760	500 to 1700	0.1	±0.03%	±0.02%
	°F	32 to 3200	932 to 3092	0.1	±0.03%	±0.02%
TC TYPE S	°C	0 to 1760	800 to 1760	0.1	±0.03%	±0.02%
	°F	32 to 3200	1472 to 3200	0.1	±0.03%	±0.02%
TC TYPE B	°C	200 to 1820	1000 to 1820	0.1	±0.03%	±0.02%
	°F	392 to 3308	1832 to 3308	0.1	±0.03%	±0.02%
TC TYPE C	°C	0 to 2300	0 to 2300	0.1	±0.03%	±0.02%
	°F	32 to 4172	32 to 4172	0.1	±0.03%	±0.02%
TC TYPE N	°C	0 to 1300	0 to 1300	0.1	±0.03%	±0.02%
	°F	32 to 2372	32 to 2372	0.1	±0.03%	±0.02%
TC TYPE E	°C	-270 to 1000	-150 to 1000	0.1	±0.03%	±0.02%
	°F	-454 to 1832	-238 to 1832	0.1	±0.03%	±0.02%
TC TYPE F	°C	0 to 1400	0 to 1400	0.1	±0.03%	±0.02%
	°F	32 to 2552	32 to 2552	0.1	±0.03%	±0.02%
PT 100 IEC	°C	-200 to 850	-200 to 600	0.1	±0.03%	±0.02%
	°F	-328 to 1562	-328 to 1112	0.1	±0.03%	±0.02%
PT 100 JIS	°C	-200 to 850	-200 to 600	0.1	±0.03%	±0.02%
	°F	-328 to 1562	-328 to 1112	0.1	±0.03%	±0.02%
PT 100 US	°C	-200 to 850	-200 to 600	0.1	±0.03%	±0.02%
	°F	-328 to 1562	-328 to 1112	0.1	±0.03%	±0.02%
NI100	°C	-60 to 180	-60 to 180	0.1	±0.03%	±0.02%
	°F	-76 to 356	-76 to 356	0.1	±0.03%	±0.02%
NI120	°C	0 to 150	0 to 150	0.1	±0.03%	±0.02%
	°F	32 to 302	32 to 302	0.1	±0.03%	±0.02%
mV		-18 to 21	-18 to 21	1µV	±(0.02%+3µV)	±(0.01%+3µV)
		0 to 100	0 to 21	1µV	±(0.02%+3µV)	±(0.01%+3µV)
			21 to 53	10µV	±(0.02%+3µV)	±(0.01%+3µV)
			53 to 100	10µV	±(0.02%+6µV)	±(0.01%+6µV)
		0 to 1000	0 to 1000	100µV	±(0.02%+60µV)	±(0.01%+40µV)
V		0 to 10	0 to 10	1mV		±(0.02%+0.4mV)
mA		0 to 21	0 to 21	1µA	±(0.02%+0.5µA	±(0.02%+0.5µA)
Ω (IN)		0 to 400	0 to 400	10mΩ	±(0.02%+38mΩ)	±(0.02%+38mΩ)
Ω (OUT)		0 to 400	0 to 400	10mΩ	±(0.03%+78mΩ)	±(0.03%+78mΩ)
mA*		0 to 22	0 to 22	1µA		±(0.02%+1µA)
V*		0 to 30	0 to 30	1mV		±(0.02%+1.2mV)

**CH2 measurement only*

ORDERING INFORMATION

MICROCAL 1+	Microcal, simulation & measurement of mV, 1V, mA, TC and RTD
MICROCAL 2+	2-Channel Microcal, simulation & measurement of mV, 10V, mA, TC and RTD
MICROCAL 1+-IS	Microcal, simulation & measurement of mV, 1V, mA, TC and RTD. For use in hazardous areas
MICROCAL 10+	Microcal, simulation & measurement of mV, 10V, mA, TC and RTD