

# PROVA iCal

## Documenting Multifunction Calibrator

CE



## Features:

1. **Unique mapping function** let you calibrate temperature (300 °C) or voltage (220V) directly (instead of 4 to 20mA indirectly).
2. iCal is a **multifunction calibrator** and an **arbitrary function generator**.
3. **Source:** mA (4 to 20mA), V (0 to 15V, 0 to 70mV), Hz, sine wave, square wave, triangular wave, truncated sine wave, user programmable waveform and temperature for 11 types of thermocouples.
4. **Measure:** Current (mA), Voltage (V, mV) and temperature in °C or °F.
5. **Programmable cold junction compensation** allows users to fine tune temperature output and measurement.
6. Programmable 0% and 100% value for easy **25% step function**.
7. **Output error warning** when output is shorted or open.
8. **Short circuit protection** for voltage output.
9. **Clear and easy user interface** (Numerical key pad, sliding switch and dot matrix LCM with backlight).
10. Voltage, frequency, PWM duty-cycle (square wave and triangular wave), and offset are programmable in the **Hz function**.
11. **Frequency range (0.3Hz to 20KHz)** covers application of audio band (speaker, MP3, MD etc.)
12. **DTMF** (Dual Tone Multi-Frequency) can perform professional testing for telephone line and audio product (MP3 or MD).
13. **Auto-step and auto-ramp functions** can quickly perform linear test.
14. **PC** can program calibrator through USB port.
15. iCal can perform **data logging** with programmable sampling time (0-255 seconds) and memory of 4000 records.
16. **Rechargeable Lithium battery** (1600mAH) with built-in charging circuit.
17. **Calibration results** (source and measure) can be **saved in memory** (2000 records). Then users download them to a PC for documentation. No needs to transcribe calibration data manually.
18. To **distinguish calibration data** at different locations, data can be saved under different file names.

## Electrical Specifications:

(23±5 °C, 10 minutes after turning on the power)

**mA (source)** (Vopen > 15V)

Range	Resolution	Accuracy of Reading
-4mA to -0.005mA	1µA	+/-0.03% +/- 5dgts
0.005mA to 4mA		+/-0.03% +/- 5dgts
4mA to 20mA		+/-0.03% +/-3dgts
20mA to 24mA		+/-0.03% +/-5dgts

**V (source)** (maximum load 1mA, short circuit protection < 100mA)

Range	Resolution	Accuracy of Reading
-3V to -0.005V	0.001V	+/-0.03% +/-5dgts
0.005V to 10V		
10V to 15V		

**mA (measure)**

Range	Resolution	Accuracy of Reading
-4mA to -0.005mA	1uA	+/-0.03% +/- 5dgts
0.005mA to 4mA		+/-0.03% +/- 5dgts
4mA to 20mA		+/-0.03% +/-3dgts
20mA to 24mA		+/-0.03% +/-5dgts

If reading of mA (measure) is less than 5 digits, it is displayed as 0.

**V (measure)**

Range	Resolution	Accuracy of Reading
-3V to -0.005V	0.001V	+/-0.03% +/-5dgts
0.005V to 10V		
10V to 24V		

If reading of V (measure) is less than 5 digits, it is displayed as 0.

**Frequency (source, 10 Vpp, 0V offset, square wave, duty cycle = 50%)**

Range (Hz)	Input Resolution	Accuracy
0.3 to 99.999	0.1Hz	0.002Hz
10.00 to 999.99		0.02Hz
1000.0 to 9999.9		0.2Hz
10000 to 20000	1Hz	2Hz

**Voltage Peak to Peak for Sine Wave**

(Vpp, 0.3~20KHz, 50% duty cycle, sine wave, 0V offset)

Range (V)	Resolution	Accuracy of Reading
0.1 to 20V	0.001V	5% +/- 0.3V

**Voltage Peak to Peak for Non-Sine Wave** (Vpp, 0.3~20KHz, 0V offset)

Range (V)	Resolution	Accuracy of Reading
0.1 to 20V	0.001V	6% +/- 0.4V

**Voltage Peak to Peak** (Vpp, 0.3~20KHz, 50% duty cycle, square wave, 0V offset)

Range (V)	Resolution	Accuracy of Reading
1 to 20V	0.001V	6% +/- 0.4V

**Voltage of Offset** (Maximum Vpp < 20V)

Range	Resolution	Accuracy of Reading
-5V to 5V	0.001V	5% +/-0.5V +/-5%xVpp

**Duty Cycle** (% , square wave, 10 Vpp, 0.3~20KHz)

Range	Resolution	Rise Time of Vpp	Fall Time of Vpp
0 to 100%	1%	10μS max, 5μS typical	15μS max, 7.5μS typical

**Temperature, Thermocouples**

(source and measure, 0.1°C & 0.1°F Resolution, Internal Cold Junction Compensation, thermocouple accuracy not included, 3 minutes after plugging in thermocouples.)

	°C		°F	
	Range	Accuracy	Range	Accuracy
K	-200 to -150	2.0	-328 to -238	3.6
	-150 to 0	1.2	-238 to 32	2.1
	0 to 1000	0.8	32 to 1832	1.4
	1000 to 1370	1.2	1832 to 2498	2.1
J	-200 to -150	2.0	-328 to -238	3.6
	-150 to 0	1.0	-238 to 32	1.8
	0 to 1050	0.7	32 to 1922	1.2
E	-200 to -150	1.5	-328 to -238	2.7
	-150 to 0	0.9	-238 to 32	1.6
	0 to 850	0.7	32 to 1562	1.2
T	-200 to -150	1.5	-328 to -238	2.7
	-150 to 0	1.2	-238 to 32	2.1
	0 to 400	0.8	32 to 752	1.4
R	0 to 500	1.8	32 to 932	3.2
	500 to 1760	1.5	932 to 3200	2.7
S	0 to 500	1.8	32 to 932	3.2
	500 to 1760	1.5	932 to 3200	2.7
N	-200 to 0	1.5	-328 to 32	2.7
	0 to 1300	0.9	32 to 2372	1.6
L	-200 to 0	0.9	-328 to 32	1.6
	0 to 900	0.7	32 to 1652	1.2
U	-200 to 0	1.1	-328 to 32	1.9
	0 to 600	0.7	32 to 1112	1.2
B	600 to 800	2.2	1112 to 1472	3.9
	800 to 1000	1.8	1472 to 1832	3.2
	1000 to 1820	1.4	1832 to 3308	2.5
C	0 to 1800	1.0	32 to 3272	1.8
	1800 to 2310	1.5	3272 to 4190	2.7
mV	-10mV to 70mV	0.05mV	-10mV to 70mV	0.05mV

**DTMF (Hz)**

Range (Hz)	Resolution	Accuracy of Reading
0.3 to 99.999	0.1Hz	0.002Hz
10.00 to 999.99		0.02Hz
1000.0 to 9999.9		0.2Hz
10000 to 20000	1Hz	2Hz

**DTMF (%)**

Range (%)	Resolution	Accuracy of Reading
0% ~ 100%	1%	5%

**DTMF (Phase Angle)**

Range (°)	Resolution	Accuracy of Reading
0 ~ 360	1°	100 $\mu$ S+1°

**DTMF (Vpp, F1=F2, <1 KHz, %1=%2, Phase1=Phase2)**

Range	Resolution	Accuracy of Reading
5V ~ 20V	0.001V	10% +/-0.6V

**DTMF (Offset, F1=F2, <1 KHz, %1=%2, Phase1=Phase2)**

Range	Resolution	Accuracy of Reading
-5V ~ 5V	0.001V	10% +/-0.6V +/-5%xVpp

**General Specifications:**

AC Adaptor:	AC 110V or 220V, 50/60Hz input. DC 15V / 0.5A output
Dimension:	214.0(L) x 98.7(W) x 56.0(H) mm 8.4" (L) x 3.9" (W) x 2.2" (H)
Weight:	650g / 22.9oz (Batteries included)
Operation Environment:	0°C ~ 50°C, $\leq$ 85% RH
Storage Environment:	-20°C ~ 60°C, $\leq$ 75% RH
Accessories:	Carrying case x 1, User manual x 1, AC adaptor x 1, USB cable x 1, Software CD x 1, Software manual x 1, K-type thermocouple (dual plugs) x 1, Alligator clips x 2 (black and red), Test leads x 2 (black and red), Rechargeable lithium battery (11.1V/ 1600mAh) x 1

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