PROVA 133

Documenting Multifunction Calibrator

and an Arbitrary Function Generator

Features:

1. **Source** 4~20 mA loop Current
2. **Simulate** 4~20 mA transmitter
3. **Simulate** electronic load (Max. 30V, 20mA)
4. **Test** LED brightness (0~24mA)
5. **Source** 0~70mV and 0~15V
6. **Calibrate** temperature with selection of 11 types of thermocouples
7. **Source** frequency (0.3 to 20KHz) of many waveforms
8. **Source**: mA, V, Hz, sine wave, square wave, triangular wave, truncated sine wave, user programmable waveform and temperature.
9. Generate arbitrary waveform
10. Generate single pulse (3μS to 999.99mS)
11. Map 4~20 mA into engineering units
12. **Measure:** Current (mA), Voltage (mV, V), and temperature (°C, °F)
13. **Measure** 4~20 mA with 24V loop supply simultaneously
14. Selectable 250Ω HART resistor to facilitate use with **HART communication** device
15. Programmable cold junction compensation for temperature measurement
16. **Auto step** and auto ramp for sourcing mA, V, and temperature
17. Dot matrix LCD with backlight
18. Rechargeable lithium battery (1600mAh)
19. **Data logging** function for source and measurement
20. Program calibrator through PC USB port
21. Programmable 0% and 100% value for easy 25% step function
22. **DTMF** (Dual Tone Multi-Frequency) can perform professional testing for telephone line and audio product (MP3 or MD)

Electrical Specifications:

(23+/- 5℃, 10 minutes after turning on the power)

mA (source) (Vopen > 24V)

Range	Resolution	Accuracy of Reading
0.005mA to 4mA	1uA	+/-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
0.005V to 10V	0.001V	+/-0.03% +/-5dgts
10V to 15V		

mA (measure)

Range	Resolution	Accuracy of Reading
-4mA to -0.005mA	1uA	+/-0.03% +/-10dgts
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% +/-10dgts
0.005V to 10V		+/-0.03% +/-5dgts
10V to 24V		+/-0.03% +/-5dgts

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	0.1Hz	0.02Hz
1000.0 to 9999.9	0.1Hz	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

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	-382 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	-382 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	-382 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	-382 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

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

Pulse (square wave, 10 Vpp, Offset -5V~+5V)

Range	Resolution	Rise Time of Vpp	Fall Time of Vpp
3.0μS to 9999.9μS	0.1μS	10μS max, 5μS typical	15μS max, 7.5μS typical
10.000mS to 99.999mS	0.001mS		
100.00mS to 999.99mS	0.01mS		

DTMF (Hz)

Range (Hz)	Resolution	Accuracy of Reading
0.3 to 99.999	0.1Hz	0.002Hz
10.00 to 999.99	0.1Hz	0.02Hz
1000.0 to 9999.9	0.1Hz	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**µS**+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 Power Adaptor:	AC 110V or AC 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℃ ~ 50℃, 85% RH
Storage Environment:	-20℃ ~ 60℃, 75% RH
Accessories:	Carrying case x 1, User manual x 1, AC power 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

PROVA INSTRUMENTS INC.

Add: 6F-2, No. 129, Lane 235, Pao-Chiao Road, Shin-Tien District,
New Taipei City 23145, TAIWAN

Tel: 886-2-89191255 **Fax:** 886-2-89191489

E-mail: prova@ms3.hinet.net **Website:** www.prova.com.tw