



CE
Datalogging
True RMS
DMM 909 Pro
STEK



- 1. 60,000 counts i.e 5.5 digit Display (Equivalent to Bench Top DMM)**
- 2. Dual Input Channels**
 - **Study the relationship of two voltages similar to a dual channels DSO**
 - **Study of relationship of voltage and current with one DMM**
 - **Dual display of frequency and duty cycle**
- 3. 0.03% DC basic accuracy and 0.1% AC basic accuracy (Equivalent to Bench Top DMM)**
- 4. Bandwidth of 200KHz (max.), And true RMS**
- 5. Fast ACV, ACA response**
- 6. Better AC accuracy than that of a bench-top DMM**
- 7. More functions than those of a bench-top DMM**
- 8. Much lower cost than that of a bench-top DMM**
- 9. Record data of both channels with User selectable Sampling Time**
- 10. Download data using a PC through the RS-232C interface (RS232 toUSB Converter available Optionally**

Specification ($23^{\circ}\text{C} \pm 5^{\circ}\text{C}$)_

The following accuracy is specified for one single channel (channel 1 or channel 2). If dual channels are used at the same time, additional % of accuracy should be added to the listed accuracy. Please refer to the supplemental dual channels specification. The following accuracy is also specified for the ZEROED (relative) value. The accuracy is given as $\pm\%$ of reading $\pm$ number of least significant digits.

DC Voltage:(Input Impedance: $10\text{M}\Omega$)

Range	Resolution	Accuracy	Overload Protection
60.000mV	0.001mV	$\pm 0.1\% \pm 5\text{dgt}$ ¹	DC 1000V
600.00mV	0.01mV	$\pm 0.03\% \pm 3\text{dgt}$ ^{2, 3}	DC 1000V
6.0000V	0.0001V	$\pm 0.03\% \pm 3\text{dgt}$	DC 1000V
60.000V	0.001V	$\pm 0.03\% \pm 3\text{dgt}$	DC 1000V
600.00V	0.01V	$\pm 0.03\% \pm 3\text{dgt}$	DC 1000V
1000.0V	0.1V	$\pm 0.04\% \pm 3\text{dgt}$	DC 1000V

¹ To achieve the specified accuracy in the 60mV range, users must short the input and zero the reading by pressing the ZERO button before taking any measurement (for channel 1 and channel 2) .

² To achieve the specified accuracy in the 600mV range for channel 2, users must short the input and zero the reading by pressing the ZERO button before taking any measurement (for channel 2 only) .

³ Add additional 0.02% for channel 2.

AC Voltage: The accuracy of ACV or AC mV is specified for 5%-100% of range from 20Hz – 200KHz, True RMS, crest factor < 3 at full scale, and < 6 at half scale except 1000V range where it is 1.5 at full scale and 3 at half scale. Input Impedance is 10M Ω , and overloaded protection is AC 1000V for all range. Accuracy is also specified for single channel (channel 1 or channel 2). If dual channels measurements are performed, additional specification of accuracy will be introduced. Please refer to the supplemental dual channels specification. Due to the wide bandwidth, the reading might not be zero when no inputs present. But the residual reading does not affect the listed accuracy. If the AC reading is less than 100 least significant counts, it is set to zero by the unit.

Range (ACV)	Resolution	Accuracy (50/60Hz)	Accuracy (45Hz – 1KHz)
60.000mV	0.001mV	$\pm 0.1\% \pm 20 \text{dgt}$ s	$\pm 0.3\% \pm 20 \text{dgt}$ s
600.00mV	0.01mV	$\pm 0.1\% \pm 20 \text{dgt}$ s	$\pm 0.3\% \pm 20 \text{dgt}$ s
6.0000V	0.0001V	$\pm 0.1\% \pm 20 \text{dgt}$ s	$\pm 0.3\% \pm 20 \text{dgt}$ s
60.000V	0.001V	$\pm 0.1\% \pm 20 \text{dgt}$ s	$\pm 0.6\% \pm 20 \text{dgt}$ s
600.00V	0.01V	$\pm 0.1\% \pm 20 \text{dgt}$ s ¹	$\pm 0.6\% \pm 20 \text{dgt}$ s
1000.0V (0–400V)	0.1V	$\pm 0.1\% \pm 20 \text{dgt}$ s	$\pm 2\% \pm 30 \text{dgt}$ s
1000.0V (400-1000V)	0.1V	$\pm 0.1\% \pm 20 \text{dgt}$ s ²	(45Hz – 400Hz) $\pm 2\% \pm 30 \text{dgt}$ s

¹ For channel 2, add additional 0.05% for the range of 400 to 600V.

² For channel 2, add additional 0.05%.

Range (ACV)	Accuracy (20Hz - 45Hz)	Accuracy (1KHz – 10KHz)	Accuracy (10KHz – 20KHz)
60.000mV	$\pm 0.8\% \pm 25 \text{dpts}$	$\pm 2\% \pm 20 \text{dpts}$	$\pm 2.5\% \pm 20 \text{dpts}$
600.00mV	$\pm 0.8\% \pm 25 \text{dpts}$	$\pm 1\% \pm 20 \text{dpts}$	$\pm 2.5\% \pm 20 \text{dpts}$
6.0000V	$\pm 0.8\% \pm 25 \text{dpts}$	$\pm 1\% \pm 20 \text{dpts}$	$\pm 2.0\% \pm 20 \text{dpts}$
60.000V	$\pm 0.8\% \pm 25 \text{dpts}$	$\pm 1\% \pm 20 \text{dpts}$	$\pm 2.0\% \pm 20 \text{dpts}$
600.00V (0-400V)	$\pm 0.8\% \pm 25 \text{dpts}$	$\pm 5\% \pm 20 \text{dpts}$	Not Specified
600.00V (400-600V)	$\pm 0.8\% \pm 25 \text{dpts}$	Not Specified	Not Specified
1000.0V (0-400V)	$\pm 0.8\% \pm 25 \text{dpts}$	$\pm 2\% \pm 40 \text{dpts}$	Not Specified
1000.0V (400-1000V)	$\pm 0.8\% \pm 25 \text{dpts}$	Not Specified	Not Specified

Range (ACV)	Accuracy (20KHz – 50KHz)	Accuracy (50KHz – 100KHz)	Accuracy (100kHz – 200KHz)
60.000mV	$\pm 4\% \pm 40 \text{dpts}$	$\pm 4\% \pm 40 \text{dpts}$	Not Specified
600.00mV	$\pm 2\% \pm 40 \text{dpts}$	$\pm 2\% \pm 40 \text{dpts}$	$\pm 2\% \pm 40 \text{dpts}$
6.0000V	$\pm 2\% \pm 40 \text{dpts}$	$\pm 2\% \pm 40 \text{dpts}$	$\pm 2\% \pm 40 \text{dpts}$
60.000V	$\pm 4\% \pm 40 \text{dpts}$	$\pm 4\% \pm 40 \text{dpts}$	Not Specified
600.00V	Not Specified	Not Specified	Not Specified
1000.0V	Not Specified	Not Specified	Not Specified

DC Current:(10A terminal is protected by a 20A fast blown, high energy fuse, and the terminal of μ A and mA is protected by 1A fast blown, high energy fuse)

Range	Resolution	Accuracy
600.00 μ A	0.01 μ A	$\pm 0.2\% \pm 10$ dgts
6000.0 μ A	0.1 μ A	$\pm 0.1\% \pm 10$ dgts
60.000mA	0.001mA	$\pm 0.2\% \pm 10$ dgts
600.00mA	0.01mA	$\pm 0.1\% \pm 10$ dgts
1.0000A	0.0001A	$\pm 0.1\% \pm 10$ dgts
10.000A ¹	0.001A	$\pm 0.3\% \pm 10$ dgts

¹20A overload for maximum 30 seconds

AC Current:(The accuracy is specified for a single channel for 5%-100% of range for 45Hz – 20KHz, True RMS, 10A terminal is protected by a 20A fast blown, high energy fuse, and the terminal of μ A and mA is protected by 1A fast blown, high energy fuse. If the AC reading is less than 100 least significant digits, it is set to zero by the unit)

Range (ACA)	Resolution	Accuracy (50/60Hz)	Accuracy (45Hz – 1KHz)
600.00 μ A	0.01 μ A	$\pm 0.3\% \pm 20$ dgts	$\pm 0.4\% \pm 20$ dgts
6000.0 μ A	0.1 μ A	$\pm 0.3\% \pm 20$ dgts	$\pm 0.4\% \pm 20$ dgts
60.000mA	0.001mA	$\pm 0.3\% \pm 20$ dgts	$\pm 0.4\% \pm 20$ dgts
600.00mA	0.01mA	$\pm 0.3\% \pm 20$ dgts	$\pm 0.4\% \pm 20$ dgts
1.0000A	0.0001A	$\pm 0.3\% \pm 20$ dgts	$\pm 0.4\% \pm 20$ dgts
10.000A ¹	0.001A	$\pm 0.5\% \pm 20$ dgts	$\pm 0.4\% \pm 20$ dgts

¹20A overload for maximum 30 seconds

Range (ACA)	Accuracy (20Hz - 45Hz)	Accuracy (1KHz – 10KHz)	Accuracy (10KHz – 20KHz)
600.00 μ A	$\pm 1\% \pm 20$ dgts	$\pm 2\% \pm 20$ dgts	$\pm 1\% \pm 20$ dgts
6000.0 μ A	$\pm 1\% \pm 20$ dgts	$\pm 2\% \pm 20$ dgts	$\pm 1\% \pm 20$ dgts
60.000mA	$\pm 1\% \pm 20$ dgts	$\pm 0.5\% \pm 20$ dgts	$\pm 1\% \pm 20$ dgts
600.00mA	$\pm 1\% \pm 20$ dgts	$\pm 0.5\% \pm 20$ dgts	$\pm 1\% \pm 20$ dgts
1.0000A	$\pm 1\% \pm 20$ dgts	$\pm 1.5\% \pm 20$ dgts	Not Specified
10.000A ¹	$\pm 2\% \pm 20$ dgts	$\pm 1.5\% \pm 20$ dgts	Not Specified

¹20A overload for maximum of 30 seconds

Supplemental Dual Channels Specification (DC – 400Hz):

The following accuracy should be added to all the listed accuracy if dual channels measurements are performed.

	ACV (Ch2)	DCV (Ch2)	ACA (Ch2)	DCA (Ch2)
ACV (Ch1)	$\pm 1\% \pm (V1 - V2)$ * 200 PPM (Ch1, Ch2)	$\pm 0.5\% \pm (V1 - V2)$ * 20 PPM (Ch1, Ch2)	$\pm 0.1 \mu A / V$ (μA , Ch2) $\pm 1 \mu A / V$ (mA, Ch2) $\pm 0.2mA / V$ (A, Ch2) $\pm 2mV / A$ (mV, Ch1) $\pm 5mV / A$ (V, Ch1)	$\pm 0.25\%$ (Ch1, Ch2)
DCV (Ch1)	$\pm 0.5\% \pm (V1 - V2)$ * 20 PPM (Ch1, Ch2)	$\pm 0.25\%$ (Ch1, Ch2)	$\pm 0.25\%$ (Ch1, Ch2)	$\pm 0.25\%$ (Ch1, Ch2)

The result of (V1-V2) * PPM is of volts.

V1: the voltage reading in volts of channel 1

V2: the voltage reading in volts of channel 2

PPM: parts per million, Ch1: Channel 1, Ch2: Channel2

Resistance: (Ω)

Range	Resolution	Accuracy	Overload Protection
999.99 Ω	0.01 Ω	$\pm 0.19\% \pm 8$ dgts	AC 1000V
9.9999K Ω	0.0001K Ω	$\pm 0.39\% \pm 3$ dgts	AC 1000V
99.999K Ω	0.001K Ω	$\pm 0.39\% \pm 3$ dgts	AC 1000V
999.99K Ω	0.01K Ω	$\pm 0.19\% \pm 3$ dgts	AC 1000V
9.9999M Ω	0.0001M Ω	$\pm 0.2\% \pm 6$ dgts	AC 1000V
40.000M Ω	0.001M Ω	$\pm 1\% \pm 6$ dgts	AC 1000V

Continuity: ($\bullet$), open voltage 3V approx.)

Range	Resolution	Beeper	Overload Protection
999.99 Ω	0.01 Ω	< 40 Ω approx.	AC 1000V

Capacitance: (μ F, auto range, and for film capacitor or better)

Range	Resolution	Accuracy ¹
60.00nF	0.01nF	$\pm 0.8\% \pm 5$ dgts
600.0nF	0.1nF	$\pm 1.5\% \pm 5$ dgts
6.000 μ F	0.001 μ F	$\pm 1.5\% \pm 5$ dgts
60.00 μ F	0.01 μ F	$\pm 2.0\% \pm 5$ dgts
490.0 μ F	0.1 μ F	$\pm 3.5\% \pm 5$ dgts

¹ for reading less than 150 counts (least significant digits), add additional 15 digits to the specified accuracy.

Capacitance: ($\pm$, manual range, and for film capacitor or better)

Range	Resolution	Accuracy ¹
99.99nF	0.01nF	$\pm 0.8\% \pm 5$ dgts
999.9nF	0.1nF	$\pm 1.5\% \pm 5$ dgts
9.999 μ F	1 μ F	$\pm 1.5\% \pm 5$ dgts
99.99 μ F	0.01 μ F	$\pm 2\% \pm 5$ dgts
999.9 μ F	0.1 μ F	$\pm 3.5\% \pm 5$ dgts

¹ for reading less than 150 counts (least significant digits), add additional 15 digits to the specified accuracy.

Diode Test: (open voltage 3V approx., overload protection AC 1000V)

Range	Resolution	Accuracy	Short Circuit Current
3.0000V	0.0001V	$\pm 2\% \pm 5$ dgts	0.8 mA typical

Frequency: (TTL)

Range (Auto)	Resolution	Accuracy	Overload Protection
1.000Hz – 2MHz	0.0001Hz – 0.0001MHz	$\pm 0.005\% \pm 4$ dgts	AC 1000V

Duty Cycle: (% , TTL, 1Hz – 600KHz)

Range	Resolution	Accuracy	Overload Protection
0.001% - 9.999%	0.001%	± 30 d/KHz ± 30 dgts	AC 1000V
10.00% – 100.00%	0.01%	± 3 d/KHz ± 3 dgts	AC 1000V

Frequency: (AC sine wave)

Range	Resolution	Accuracy	Overload Protection
1.0000Hz– 200KHz	0.0001Hz–100Hz	±0.02%±4dgt	AC 1000V

Sensitivity (Sine wave)

100mV min @ mV range

1 V min @ V range

Duty Cycle: (% , Sine Wave)

Range	Resolution	Accuracy	Overload Protection
0.001% – 100.00%	0.001% – 0.01%	Not specified	AC 1000V

General Specification

Indoor User

Battery Type:	9V
Fuse:	Fast 20A/1000V (A terminal) Fast 1A/1000V(mA / μ A terminal)
Display:	5 + 5 digits LCD with 30 segments bar graph
Range Selection:	auto and manual
Overload Indication:	OL
Power Consumption:	6 mA (approx.)
Low battery Indication:	
Operating Temperature:	-10°C to 40°C
Operating Humidity:	less than 85% relative
Altitude:	up to 2000M
Storage Temperature:	-20°C to 60°C
Storage Humidity:	less than 75% relative
Dimension:	207mm(L) x 101mm (W) x 47mm (H) 8.15" (L) x 4" (W) x 1.85" (H)
Weight:	430g / 15.2oz (battery included)
Accessories:	Users manual x 1 9V battery x 1 RS-232C interface cable