Specifications 1

Handy Digital Multimeters VOAC86A (Discontinued)

Accuracy	(1)When the count is 3.5 digits, 4,000: ±(% of reading + digits) (2)When the count is 4.5 digits, 40,000: ±(% of reading + digits x 10) Guaranteed as long as the temperature is 23°C ±5°C and the humidity is 75%RH or less.

■DC Volt

Range	Resolution 4.5-digit	Resolution 3.5-digit	Accuracy	Max. Input Voltage
40mV	1mV	10mV	0.5%+6d	±500VDC/500V ACrms
400mV	10mV	100mV		
4V	100mV	1mV	0.08%+2d	±1,000VDC/750V ACrms
40V	1mV	10mV		
400V	10V	100mV		
1,000V	100V	1V		

NMR	60dB or more (50/60Hz)
CMR	120dB or more (DC, 50/60Hz), unbalanced resistance = 1kW
Temperature Coefficient	0.1 x (accuracy at 23°C ±5°)/°C (0°C to 18°C, 28°C to 50°C)
Input RC	approx. 10MW, nominal value: 30pF approx. 10MW, nominal value: 100pF (40mV or 400mV range)

■AC Volt

Measurement Method	AC couple, TRUE RMS (crest factor at full scale < 3:1, crest factor at half scale < 6:1)

Range	Resolution 4.5-digit	Resolution 3.5-digit	Accuracy*1 50Hz/60Hz	40Hz to 1kHz	1kHz to 5kHz	5kHz to 20kHz
400mV	10mV	100mV	0.5%+3d	0.8%+3d	1.0%+3d	1.6%+6d*2
4V	100mV	1mV		0.8%+4d	1.0%+4d	1.8%+6d*2
40V	1mV	10mV				
400V	10mV	100mV				
750V	100mV	1V		1.0%+4d	3.0%+6d*2	-

*1 Standards for usage in the 5% to 100% range.
*2 Effective for 10% to 100% of the range.

Temperature Coefficient	0.15 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Input RC	approx. 10MW, nominal value: 30pF (100pF for the 400mV range)
Max. Input Voltage	±500VDC/500V ACrms (400mV range) ±1,000VDC/750V ACrms

■DCV+ACV

Measurement Method	DC couple, TRUE RMS (crest factor at full scale < 3:1, crest factor at half scale < 6:1)

Range	Resolution 4.5-digit	Resolution 3.5-digit	Accuracy*1 50Hz/60Hz	40Hz to 1kHz	1kHz to 5kHz	5kHz to 20kHz
4V	100mV	1mV	0.8%+8d	1.0%+4d	1.2%+8d	2.0%+8d*2
40V	1mV	10mV				
400V	10mV	100mV				
750V	100mV	1V		1.2%+8d	3.2%+8d*2	-

*1 Standards for usage in the 5% to 100% range.
*2 Effective for 10% to 100% of the range.

Temperature	0.15 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)

*1 Standards for usage in the 5% to 100% range.
*2 Effective for 10% to 100% of the range.

Temperature Coefficient	0.15 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Input RC	approx. 10MW, nominal value: 30pF
Update Rate	approx. 1.6 times/sec.
Max. Input Voltage	±1,000VDC/750V ACrms

■DC Current

Range	Resolution 4.5-digit	Resolution 3.5-digit	Accuracy	Inter-terminal Voltage Drop (full scale)
400mA	0.01mA	0.1mA	0.4%+4d	60mV or less
4,000mA	0.1mA	1mA	0.2%+2d	600mV or less
40mA	1mA	10mA	0.4%+4d	132mV or less
400mA	10mA	100mA	0.2%+3d	1,320mV or less
4A	100mA	1mA	0.8%+6d	120mV or less
10A	1mA	10mA	0.4%+4d	300mV or less

Temperature Coefficient	0.15 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
mAmA Range Input Protection	0.63A/500V IR 200kA fuse
A Range Input Protection	15A/600V IR 100kA fuse

■AC Current

Measurement Method	AC couple, TRUE RMS (crest factor at full scale < 3:1, crest factor at half scale < 6:1)

Range	Resolution 4.5-digit	Resolution 3.5-digit	Accuracy*1 50Hz/60Hz	Accuracy*1 40Hz to 300Hz	Accuracy*1 300Hz to 3kHz	Inter-terminal Voltage Drop (full scale)
400mA	0.01mA	0.1mA	1.0%+4d*2	1.5%+4d*2	-	60mV or less
4,000mA	0.1mA	1mA	0.8%+3d	1.0%+3d	1.2%+3d	600mV or less
40mA	1mA	10mA	1.0%+4d*2	1.5%+4d*2	-	132mV or less
400mA	10mA	100mA	0.8%+3d	1.0%+3d	1.2%+3d	1,320mV or less
4A	100mA	1mA	1.0%+4d*2	1.5%+4d*2	-	120mV or less
10A*3	1mA	10mA	0.8%+3d	1.0%+3d	1.2%+3d	300mV or less

*1 Standards for usage in the 5% to 100% range.
*2 Effective for 10% to 100% of the range.
*3 The accuracy is guaranteed at 2A or more input in the 10A range.

Temperature Coefficient	0.15 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
mAmA Range Input Protection	0.63A/500V IR 200kA fuse
A Range Input Protection	15A/600V IR 100kA fuse

■Resistance

Range	Resolution 4.5-digit	Resolution 3.5-digit	Accuracy	Test Current	Terminal Open Voltage
40W	1mW	10mW	0.2%+6d	1.3mA or less	2.6V or less
400W	10mW	100mW			
4kW	100mW	1W	0.15%+2d	130mA or less	
40kW	1W	10W		13mA or less	
400kW	10W	100W		1.3mA or less	1.3V or less
4MW	100W	1kW	0.3%+2d	130nA or less	
40MW	1kW	10kW	1.5%+5d		

4MW	100W	1kW	0.3%+2d	130nA or less
40MW	1kW	10kW	1.5%+5d	

Temperature Coefficient	0.1 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Max. Input Voltage	±500VDC/500V ACrms

■**Conductance (nS)**

Range	Resolution	Accuracy*	Terminal Open Voltage
400nS	0.1ns	0.8%+5d	1.3V or less

(Note) The conductance calculation is 1/W.
Measurement values exceeding 1GW are for reference only because factors such as the measurement environment may affect them.

Temperature Coefficient	0.1 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Max. Input Voltage	±500VDC/500V ACrms

■**Frequency (Hz): Main display section (auto range only)**

Measurement Method: 5Hz-4MHz

Range	Resolution	Accuracy*	Input Sensitivity
99.999Hz	0.001Hz	0.003%+4d	5Hz to 100kHz: 200mVrms sine wave or between 600mVpp and 20Vrms
999.99Hz	0.01Hz		
9.9999kHz	0.1Hz		
99.999kHz	1Hz		100kHz to 500kHz: 400mVrms sine wave or between 600mVpp and 20Vrms
999.99kHz	10Hz		500kHz to 2MHz: 850mVrms sine wave or between 2.6Vpp and 20Vrms
4.0000MHz	100Hz		2MHz to 4MHz: 1Vrms sine wave or between 3Vpp and 20Vrms

* A pulse width of 3ms or more is required.

Update Rate	approx. 1.2 times/sec.
Temperature Coefficient	0.05 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Max. Input Voltage	±500VDC/500V ACrms

■**Frequency (Hz): Sub display section (auto range only)**

Standards for the AC voltage or adaptor (AC) function

Measurement Method: 5Hz-4MHz

Range	Resolution	Accuracy*1	Input Sensitivity*2
99.99Hz	0.01Hz	0.002%+1d	5Hz to 100Hz*1: 15% or more of the full scale value
999.9Hz	0.1Hz		100Hz to 1kHz: 20% or more of the full scale value
9.999kHz	1Hz		1kHz to 10kHz: 35% or more of the full scale value
20.00kHz	10Hz		10kHz to 20kHz: 50% or more of the full scale value

*1 A pulse width of 3ms or more is required.
*2 In the AC voltage 750V range 5Hz to 100Hz: 420Vrms or more
100Hz to 1kHz: 550Vrms or more

Update Rate	approx. 1.3 times/sec.

2 In the AC voltage 750V range 5Hz to 100Hz: 420Vrms or more
100Hz to 1kHz: 550Vrms or more

Update Rate	approx. 1.3 times/sec.
Temperature Coefficient	0.05 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Max. Input Voltage	±500VDC/500V ACrms

■Duty Ratio

Range	Resolution	Accuracy	Input Frequency
0.1%-99.9%	0.1%	0.5d/kHz+2d	50Hz-250kHz*

* Applied in the circuit using a 5V logic gate with a minimum pulse width of 2ms.

Update Rate	approx. 1.2 times/sec.
Temperature Coefficient	0.15 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Max. Input Voltage	±500VDC/500V ACrms

■Diode Test

Range	Resolution	Accuracy	Test Current	Terminal Open Voltage
4V	1mV	2%+1d	approx. 0.8mA	3.5V or less

Temperature Coefficient	0.15 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Max. Input Voltage	±500VDC/500V ACrms

■Continuity Test

Range	Resolution 4.5-digit	Resolution 3.5-digit	Threshold Level	Response Time	Max. Input Voltage
400W	10mW	100mW	35W ±25W	150ms or less	±500VDC/500V ACrms

■Electrostatic Capacitance

Range	Resolution	Accuracy*1	Update Rate	Max. Input Voltage
4nF*2	1pV	4.0%+10d	approx. 3 times/sec.	±500VDC/500V ACrms
40nF	10pF	3.0%+5d		
400nF	100pF	0.8%+5d		
4mF	1nF	0.8%+5d	approx. 1.2 times/sec.	
40mF	10nF	2.0%+5d		
400mF	100nF	5.6%+5d	approx. 1 time/sec.	
4mF	1mF	5.6%+5d	approx. 4.5 times/sec.	
40mF	10mF	6.7%+5d	approx. 50 times/sec.	

*1 Accuracy for the film condenser or equivalent that has the same or lower current leakage
*2 Valid in the 10% to 100% range only.
Temperature Coefficient:0.15 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)

■dBm

Measurement Method	AC couple, TRUE RMS (crest factor at full scale < 3:1, crest factor at half scale < 6:1)

Range	Resolution	Accuracy	Measurement Range 40Hz to 5kHz	Measurement Range 5kHz to 20kHz
600W	0.01dBm	±(0.25dB+2d)	-11.76dBm to 54.25dBm	-5.74dBm to 54.25dBm

Reference Impedances	4, 8, 16, 32, 50, 75, 93, 110, 125, 135, 150, 200, 250, 300, 500, 600, 800, 900, 1,000, 1,200W
Temperature Coefficient	0.15 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Input RC	approx. 10MW, nominal value: 30pF
Update Rate	approx. 1.1 times/sec.
Max. Input Voltage	±1,000VDC/750V ACrms

Input RC	approx. 10MW, nominal value: 30pF
Update Rate	approx. 1.1 times/sec.
Max. Input Voltage	±1,000VDC/750V ACrms

■Adaptor DC

Range		Resolution		Accuracy	Input RC
4.5-digit	3.5-digit	4.5-digit	3.5-digit		
40,000	4,000	10mV	100mV	0.08%+2d	approx. 1,000MW, nominal value: 70pF

Temperature Coefficient	0.05 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Max. Input Voltage	±500VDC/500V ACrms

■Adaptor AC

Measurement Method	AC couple, TRUE RMS (crest factor at full scale < 3:1, crest factor at half scale < 6:1)

Range		Resolution		Accuracy[*1]		
4.5-digit	3.5-digit	4.5-digit	3.5-digit	50Hz/60Hz	40Hz to 1kHz	1kHz to 5kHz	5kHz to 20kHz
40,000	4,000	10mV	100mV	0.5%+3d	0.8%+3d	1.0%+3d	1.6%+6d[*2]

*1 Standards for usage in the 5% to 100% range.
*2 Effective for 10% to 100% of the range.

Temperature Coefficient	0.1 x (accuracy at 23°C ±5°C)/°C (0°C to 18°C, 28°C to 50°C)
Input RC	approx. 1,000MW, nominal value: 70pF
Max. Input Voltage	±500VDC/500V ACrms