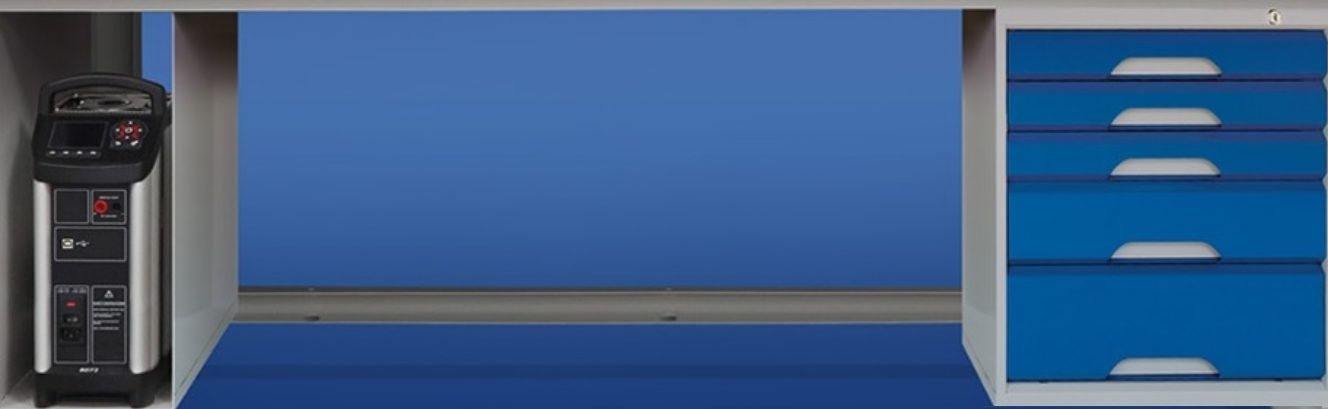


# 6½ Digit Multimeter DMM8181



# 6½ Digit Multimeter DMM8181 Specifications



## General Specifications:

### Power

Voltage : 110V/220V 1±10%  
 Power frequency : 50Hz/60Hz Consumption, 15VA

### Environment :

Working temperature : 0°C-50°C  
 Storage temperature : -20°C-70°C  
 Working humidity : 0°C-28°C < 90%RH  
 28°C-40°C < 80%RH  
 40°C-50°C < 50%RH

Storage humidity : -20°C - 70°C < 90%RH

Dimensions : H x W x D: 106mm×260mm×375mm

Weight : 3kg

Safety : Accord with IEC61010-1: 2001, CATIII 1000V/CAT IV600V, pollution class 2.

## Performance Specifications

Note : Accuracy: ±(% reading + digits), warm up time more than 2 hours  
 Temperature: 18°C - 28°C

### DC Specifications: (Accuracy specifications ± (% of readings + % of range)) \*(1)

Function	Range *(2)	Test current or load voltage	23°C ±5°C		Temperature Coefficient
					0°C-18°C 28°C-50°C
DC Voltage	100.0000mV		0.0050+0.0045		0.0005+0.0005
	1.000000V		0.0040+0.0007		0.0005+0.0001
	10.00000V		0.0035+0.0005		0.0005+0.0001
	100.0000V		0.0045+0.0006		0.0005+0.0001
	1000.000V		0.0045+0.0010		0.0005+0.0001
Resistance 4(FOUR) Wire *(1)	100.0000Ω	1mA	0.010+0.006		0.0006+0.0005
	1.000000KΩ	1mA	0.010+0.001		0.0006+0.0001
	10.00000KΩ	100µA	0.010+0.001		0.0006+0.0001
	100.0000KΩ	10µA	0.010+0.002		0.0006+0.0001
	1.000000MΩ	5µA	0.010+0.003		0.0010+0.0002
	10.00000MΩ	500nA	0.040+0.003		0.0030+0.0004
	100.0000MΩ	500nA / 10MΩ	0.800+0.010		0.1500+0.0002
DC Current	10.00000mA	≤0.1V	0.050+0.020		0.002+0.0020
	100.0000mA	≤0.6V	0.050+0.005		0.002+0.0005
	1.000000A	≤1V	0.100+0.010		0.005+0.0010
	3.000000A	≤2V	0.120+0.020		0.005+0.0020
Continuity	1000.000Ω	1mA	0.010+0.030		0.001+0.002
Diode Test	10.0000 V	1mA	0.010+0.020		0.001+0.002

Conditions : Within 10 minutes and ±0.5°C  
 Within ±10% of initial value  
 Following 2 hours warm-up  
 Fixed range between 10% and 100% of full range  
 Using 6 1/2 digit slow resolution (100PLC)  
 Measurements are made using accepted metrology practices.

## Measuring Characteristics

### DC voltage

Input resistance: 0.1 V, 1 V, 10 V ranges 10M $\Omega$  or  $\geq$ 10G $\Omega$   
 100 V, 1000 V ranges 10M $\Omega$  $\pm$ 1%

Input protection: 1000V on all ranges

### Operating characteristic:

Function	Digits	Readings/s	Additional noise error
DCV DCI 2W,4W	6½	Slow	0% of range
	6½	Fast	0% of range
	5½	Slow	0.001% of range
	5½	Fast	0.001% of range*(4)
	4½	Fast	0.001% of range *(4)]

\*(1) Specifications are for 1-hour warm-up at 6½ digits.

\*(2) 20% over range on all ranges, except 1000 VDC, 3 A range.

\*(3) Specifications are for 4-wire ohms function, or 2-wire ohms using Math Null. Without Math Null, add 0.2  $\Omega$  additional error in 2-wire ohms function.

\*(4) Add 20  $\mu$ V for dc volts, 4  $\mu$ A for dc current, or 20 m $\Omega$ for resistance.



## AC Specifications (Accuracy specifications ± (% of readings + % of range) )\*(1)

Function	Range *(2)	Frequency	23°C ±5°C	Temperature Coefficient 0°C -18°C / 23°C-50°C
AC Voltage  *(3)	100.0000mV	3Hz-5Hz	2.50+0.1	0.100+0.004
		5Hz-15Hz	1.50+0.1	0.035+0.004
		15Hz-20kHz	0.06+0.04	0.005+0.004
		20kHz-50kHz	0.12+0.05	0.011+0.005
		50kHz-100kHz	0.60+0.08	0.060+0.008
		100kHz-300kHz	4.00+0.50	0.20+0.002
	1.000000V To 750V	3Hz-5Hz	2.50+0.1	0.100+0.003
		5Hz-15Hz	1.50+0.1	0.035+0.003
		15Hz-20kHz	0.06+0.04	0.005+0.003
		20kHz-50kHz	0.12+0.05	0.011+0.005
50kHz-100kHz*(4) 100kHz-300kHz		0.60+0.08 4.00+0.50	0.060+0.008 0.20+0.02	
AC Current  *(3)	1A	3Hz-5Hz	2.50+0.1	0.100+0.006
		5Hz-15Hz	1.50+0.1	0.035+0.006
		15Hz-3kHz	0.15+0.06	0.015+0.006
		3kHz-5kHz	0.15+0.06	0.015+0.006
		3A	3Hz-5Hz	2.50+0.1
	5Hz-15Hz		1.50+0.1	0.035+0.006
	15Hz-3kHz		0.15+0.06	0.015+0.006
	3kHz-5kHz		0.15+0.06	0.015+0.006

Conditions : Sinewave input  
 Within 10 minutes and ±0.5°C  
 Within ±10% of initial value and 1% of initial frequency  
 Following 2 hours warm-up  
 Fixed range between 10% and 100% of full range (and <120V)  
 Using 6 1/2 digit resolution  
 Measurements are made using accepted metrology practices.

### Measuring Characteristics

Input impedance : 1MΩ±2% in parallel with 100pF

Input protection : 750Vrms all ranges

### Output Characteristics

Additional Low Frequency Errors ( % of reading )	AC Filter			Additional Crest Factor Errors (non-sinewave) *(5)	
	Slow	Medium	Fast	Crest Factor	Error ( % of reading )
Frequency				1-2	0.05
10Hz-20Hz	0	0.74	--	2-3	0.15
20Hz-40Hz	0	0.22	--	3-4	0.30
40Hz-100Hz	0	0.06	0.73	4-5	0.40
100Hz-200Hz	0	0.02	0.22		
200Hz-1KHz	0	0	0.18		
1KHz	0	0	0		

\*(1) Specifications are for 1-hour warm-up at 6½ digits, Slow ac filter, sinewave input

\*(2) 20% over range on all ranges, except 750 VAC, 3 A range.

\*(3) Specifications are for sinewave input >5% of range. For inputs from 1% to 5% of range and <50 kHz, add 0.1% of range additional error. For 50 kHz to 100 kHz, add 0.13% of range.

\*(4) 750 VAC range limited to 100 kHz or 8x10<sup>7</sup> Volt-Hz.

\*(5) For frequencies below 100 Hz, slow AC filter specified for sinewave input only.

**Frequency and Period Characteristics: (Accuracy specifications ± (% of reading))\*(1)**

Function	Range *(2)	Frequency	23°C ±5°C	Temperature Coefficient 0°C -18°C /23°C -50°C
Frequency / Period	100mV To 750V	3Hz-5Hz	0.10	0.005
		5Hz-10Hz	0.08	0.005
		10Hz-40Hz	0.05	0.001
		40Hz-990kHz	0.02	0.001

Conditions : Within 10 minutes and ±0.5°C.  
 Within ±10% of initial value.  
 Following 2 hours warm-up.  
 For inputs >1KHz and >100mV.  
 Using 6 1/2 digit slow resolution (1 second gate time).  
 Measurements are made using accepted metrology practices.

**Measuring Characteristics⊗Additional Low-Frequency Errors ( % of reading ) \*(3)**

Frequency	Resolution		
	6½	5½	4½
3Hz-5Hz	0	0.12	0.12
5Hz-10Hz	0	0.17	0.17
10Hz-40Hz	0	0.2	0.2
40Hz-100Hz	0	0.06	0.21
100Hz-300Hz	0	0.03	0.21
300Hz-1kHz	0	0.01	0.07
>1kHz	0	0	0.02

- \*(1) Specifications are for 1-hour warm-up at 6½ digits.
- \*(2) 20% over range on all ranges, except 750 VAC range.
- \*(3) Input > 100 mV. For 10 mV to 100 mV inputs, multiply % of reading error x10.

