DAQ-9600 Specifications

The specifications apply when the DAQ-9600 is powered on for at least 60 minutes.

(with optional GPIB)

Note :

- All specifications are ensured only under a single display.
- At least 1 hour of warm-up time is required before applying these specifications.
- MAX DC600V, AC 400V

Function	Range (2)	Resolution	Input Resistance etc.	24 Hour TCAL± 1°C	90 Day TCAL± 5°C	1 Year TCAL± 5°C	Temperature Coefficient 0°~ 18°C / 28°~ 55°C
DC Characteristics						Accuracy : ± (% of reading + % of range)	
DC Voltage (1)	100.0000 mV	0.1µV	10MΩ or >10GΩ	0.0030 + 0.0050	0.0040 + 0.0060	0.0050 + 0.0060	0.0005 + 0.0005
	1.000000 V	1µV	10MΩ or >10GΩ	0.0020 + 0.0006	0.0035 + 0.0007	0.0048 + 0.0007	0.0005 + 0.0001
	10.00000 V	10µV	10MΩ or >10GΩ	0.0015 + 0.0004	0.0020 + 0.0005	0.0035 + 0.0005	0.0005 + 0.0001
	100.0000 V	0.1mV	10MΩ±1%	0.0020 + 0.0006	0.0035 + 0.0006	0.0050 + 0.0006	0.0005 + 0.0001
	600.000 V	1mV	10MΩ±1%	0.0025 + 0.0020	0.0040 + 0.0020	0.0050 + 0.0020	0.0005 + 0.0001
Resistance (1)(3)	100.0000 Ω	100µΩ	1mA	0.003 + 0.0030	0.008 + 0.004	0.010 + 0.004	0.0008 + 0.0005
	1.000000 kΩ	1mΩ	1mA	0.002 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0008 + 0.0001
	10.00000 kΩ	10mΩ	100µA	0.002 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0008 + 0.0001
	100.0000 kΩ	100mΩ	10µA	0.002 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0008 + 0.0001
	1.000000 MΩ	1Ω	5µA	0.002 + 0.0010	0.008 + 0.001	0.010 + 0.001	0.0010 + 0.0002
	10.00000 MΩ	10Ω	500nA	0.015 + 0.0010	0.020 + 0.001	0.040 + 0.001	0.0030 + 0.0004
	100.0000 MΩ	100Ω	500nA//10MΩ	0.300 + 0.0100	0.800 + 0.010	0.800 + 0.010	0.1500 + 0.0004
	1.000000 GΩ	1kΩ	500nA//10MΩ	2.500 + 0.0500	3.500 + 0.050	3.500 + 0.050	1.0000 + 0.0040
DC Current (1)	1.000000 µA	1pA	< 0.015 V	0.025 + 0.050	0.050 + 0.050	0.050 + 0.050	0.002 + 0.003
	10.00000 µA	10pA	< 0.15 V	0.020 + 0.010	0.040 + 0.025	0.050 + 0.025	0.002 + 0.003
	100.0000 µA	100pA	< 0.020 V	0.010 + 0.020	0.040 + 0.025	0.050 + 0.025	0.002 + 0.003
	1.000000 mA	1nA	< 0.20 V	0.007 + 0.006	0.030 + 0.006	0.050 + 0.006	0.002 + 0.001
	10.00000 mA	10nA	< 0.15 V	0.007 + 0.020	0.030 + 0.020	0.050 + 0.020	0.002 + 0.002
	100.0000 mA	100nA	< 0.7 V	0.010 + 0.004	0.030 + 0.005	0.050 + 0.005	0.002 + 0.001
	2.000000 A	1µA	< 0.8 V	0.180 + 0.020	0.200 + 0.020	0.200 + 0.020	0.005 + 0.001
Diode Test (1)(4)	5.00000 V	10µV	1 mA	0.002 + 0.030	0.008 + 0.030	0.01 + 0.030	0.001 + 0.002

AC Characteristics							Accuracy : ± (% of reading + % of range)
True RMS AC Voltage (5)(6)(7)(8)	100.0000 mV	0.1µV	3Hz - 5Hz	1.00 + 0.03	1.00 + 0.04	1.00 + 0.04	0.100 + 0.004
			5Hz - 10Hz	0.35 + 0.03	0.35 + 0.04	0.35 + 0.04	0.035 + 0.004
			10Hz - 20kHz	0.04 + 0.03	0.05 + 0.04	0.06 + 0.04	0.005 + 0.003
			20kHz - 50kHz	0.10 + 0.05	0.11 + 0.05	0.12 + 0.05	0.011 + 0.005
			50kHz - 100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
			100kHz -300kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.200 + 0.020
	1.000000 V to 400.000 V	1µV ~ 1mV	3Hz - 5Hz	1.00 + 0.02	1.00 + 0.03	1.00 + 0.03	0.100 + 0.004
			5Hz - 10Hz	0.35 + 0.02	0.35 + 0.03	0.35 + 0.03	0.035 + 0.004
			10Hz - 20kHz	0.04 + 0.02	0.05 + 0.03	0.06 + 0.03	0.005 + 0.003
			20kHz - 50kHz	0.10 + 0.04	0.11 + 0.05	0.12 + 0.05	0.011 + 0.005
			50kHz - 100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
			100kHz -300kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.200 + 0.020
True RMS AC Current (5)(7)(9)	100.0000 µA	< 0.020 V	3Hz – 5Hz	1.00 + 0.04	1.00 + 0.06	1.00 + 0.06	0.100 + 0.006
			5Hz – 10Hz	0.35 + 0.04	0.35 + 0.06	0.35 + 0.06	0.035 + 0.006
			10Hz – 5kHz	0.10 + 0.04	0.10 + 0.06	0.10 + 0.06	0.015 + 0.006
			5kHz – 10kHz	0.18 + 0.04	0.18 + 0.10	0.18 + 0.10	0.035 + 0.006
	1.000000 mA	< 0.20 V	3Hz – 5Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006
			5Hz – 10Hz	0.30 + 0.04	0.30 + 0.04	0.30 + 0.04	0.035 + 0.006
			10Hz – 5kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006
			5kHz – 10kHz	0.15 + 0.04	0.15 + 0.04	0.15 + 0.04	0.030 + 0.006
	10.00000 mA	< 0.15 V	3Hz – 5Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006
			5Hz – 10Hz	0.35 + 0.04	0.35 + 0.04	0.35 + 0.04	0.035 + 0.006
			10Hz – 5kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006
			5kHz – 10kHz	0.18 + 0.04	0.18 + 0.04	0.18 + 0.04	0.030 + 0.006
	100.0000 mA	< 0.7 V	3Hz – 5Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006
			5Hz – 10Hz	0.30 + 0.04	0.30 + 0.04	0.30 + 0.04	0.035 + 0.006
			10Hz – 5kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006
			5kHz – 10kHz	0.15 + 0.04	0.15 + 0.04	0.15 + 0.04	0.030 + 0.006
	2.000000 A	< 0.8 V	3Hz – 5Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006
			5Hz – 10Hz	0.35 + 0.04	0.35 + 0.04	0.35 + 0.04	0.035 + 0.006
			10Hz – 5kHz	0.23 + 0.04	0.23 + 0.04	0.23 + 0.04	0.015 + 0.006
			5kHz – 10kHz	0.23 + 0.04	0.23 + 0.04	0.23 + 0.04	0.030 + 0.006
Frequency and Period Characteristics							Accuracy : ± (% of reading)
Frequency / Period (9)(10)(11)(12)	100.0000mV to 400.000V	—	3Hz - 5Hz	0.100	0.100	0.100	0.100
			5Hz - 10Hz	0.050	0.050	0.050	0.035
			10Hz - 40Hz	0.030	0.030	0.030	0.015
			40Hz -1MHz	0.006	0.006	0.006	0.015

Temperature Characteristics							
Temperature (RTD) (13)	-200 °C ~ -100 °C	0.001 °C	—	—	—	0.09 °C	0.004 °C / °C
	-100 °C ~ -20 °C	0.001 °C	—	—	—	0.08 °C	0.005 °C / °C
	-20 °C ~ 20 °C	0.001 °C	—	—	—	0.06 °C	0.005 °C / °C
	20 °C ~ 100 °C	0.001 °C	—	—	—	0.08 °C	0.005 °C / °C
	100 °C ~ 300 °C	0.001 °C	—	—	—	0.12 °C	0.007 °C / °C
	300 °C ~ 600 °C	0.001 °C	—	—	—	0.22 °C	0.009 °C / °C
Temperature (Thermocouples) (13)	-200 to +1000 °C	0.002 °C	E	—	—	0.2 °C	0.03 °C / °C
	-210 to +1200 ˚C	0.002 °C	J	—	—	0.2 °C	0.03 °C / °C
	-200 to +400 °C	0.002 °C	T	—	—	0.3 °C	0.04 °C / °C
	-200 to +1372 ˚C	0.002 °C	K	—	—	0.3 °C	0.04 °C / °C
	-200 to +1300 ˚C	0.003 °C	N	—	—	0.4 °C	0.05 °C / °C
	-50 to +1768 ˚C	0.01 °C	R	—	—	1 °C	0.14 °C / °C
	-50 to +1768 ˚C	0.01 °C	S	—	—	1 °C	0.14 °C / °C
	+350 to +1820 ˚C	0.01 °C	B	—	—	1 °C	0.14 °C / °C
Temperature (Thermistor) (13)	–80 ° to 150 °C	0.01 °C	—	—	—	0.01 °C	0.003 °C / °C
Capacitance Characteristics						Accuracy : ± (% of reading + % of range)	
Capacitance (14)	1.000 nF	—	—	2.00 + 2.00	2.00 + 2.00	2.00 + 2.00	0.05 + 0.01
	10.00 nF	—	—	2.00 + 1.00	2.00 + 1.00	2.00 + 1.00	0.05 + 0.01
	100.0 nF	—	—	2.00 + 0.40	2.00 + 0.40	2.00 + 0.40	0.05 + 0.01
	1.000 µF	—	—	2.00 + 0.40	2.00 + 0.40	2.00 + 0.40	0.05 + 0.01
	10.00 µF	—	—	2.00 + 0.40	2.00 + 0.40	2.00 + 0.40	0.05 + 0.01
	100.0 µF	—	—	2.00 + 0.40	2.00 + 0.40	2.00 + 0.40	0.05 + 0.01
Display		4.3" color WQVGA (480x272) with LED backlight					
Interface		RS -232C, USB host/device, LAN, Digital I/O; GPIB(optional)					
Power Source		AC 100 V / 120 V / 220 V / 240 V ±10%					
Power Line Frequency		50 Hz / 60 Hz ±10%					
Power Consumption		Max. 50VA					
Dimensions		220(W) x 88(H) x 348.6(D) mm ~ without bumper 266.9(W) x 107(H) x 357.8(D) mm ~ with bumper					
Weight		Approx. 4.5kg					

[1]. DC Specification: In addition to the availability that requires warm-up of 60 minutes, it must be set in 5/s speed rate, A-Zero on.

[2]. The entire range of measurement will pass the set range by 20% except the tests of 600 V DC, 400 V AC, 2 A DC, 2 A AC and diode.

[3]. This specifications applies to 4-wire ohms function or 2-wire ohms using math null for offset. Without math null, add 2 Ω additional error in 2-wire ohms function. The 100M and 1G ohm ranges are 2-wire only.

[4]. This specification applies to the voltage measured from input terminal. 1 mA test current is the typical value. The change of current source leads to the variation in buck of diode junction.

[5]. AC Specification: It will be available after 60 minutes of warm-up, sine wave as well as 1/s speed rate.

[6]. 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. The measurement range of 400 VAC is limited within the range of 7.5 x 10^7 Volt–Hz.

[7]. Three speed settings provided for low-frequency performance: 1/s (3 Hz), 5/s (20 Hz), 20/s (200 Hz). Additional errors will Not occur for the frequency greater than the filter settings.

[8]. Specifications are for sinewave input >5% of range, and is beyond 10 µA AC. For inputs from 1% to 5% of range, add 0.1% of range additional error.

[9]. This specification will be available after 60 minutes of warm-up and sine wave input, unless stated otherwise. This specification applies to 1s gate time.

[10]. This specification is available when both sine wave and square wave input ≥ 100 mV. For the input of 10 mV to 100 mV, the % of reading error needs to be multiplied by 10 times.

[11]. The amplitude range is from 10% to 120% and is lower than 400 VAC.

[12]. The input ≥ 60 mV, for 300 k ~ 1 MHz, within 100mV range.

[13]. The actual measurement range and test lead error will be constrained by the adopted test lead. The test lead accuracy adder covers all errors of measurements and ITS-90 temperature change.

[14]. Specifications are for film Capacitance inputs that are greater than 10% range. range.