Specifications

All specifications apply from +18 °C to +28 °C unless stated otherwise.

All specifications assume a 5-minute warm-up period.

The standard specification interval is 1 year.

Note

"Counts" refers to the number of increments or decrements of the least significant digit.

DC Volts Measurement

Range (V dc)	Resolution	Accuracy, ±(% of Reading + Counts)
4.000	0.001 V	0.1 % + 1
40.00	0.01 V	0.1 % + 1
400.0	0.1 V	0.1 % + 1
1000	1 V	0.1 % + 1
Input impedance: 10 MΩ (nominal), < 100 pF *Normal mode rejection ratio: > 60 dB at 50 Hz or 60 Hz* *Common mode rejection ratio: > 120 dB at dc, 50 Hz, or 60 Hz* *Overvoltage protection: 1000 V*		

DC Millivolts Measurement

Range (mV dc)	Resolution	Accuracy, ±(% of Reading + Counts)
400.0	0. 1 mV	0.1 % + 2

AC Volts Measurement

Range (ac)	Resolution	Accuracy, ±(% of Reading + Counts)		
		50 Hz to 60 Hz	45 Hz to 200 Hz	200 Hz to 500 Hz
400.0 mV	0.1 mV	0.7 % + 4	1.2 % + 4	7.0 % + 4
4.000 V	0.001 V	0.7 % + 2	1.2 % + 4	7.0 % + 4
40.00 V	0.01 V	0.7 % + 2	1.2 % + 4	7.0 % + 4
400.0 V	0.1 V	0.7 % + 2	1.2 % + 4	7.0 % + 4
1000 V	1 V	0.7 % + 2	1.2 % + 4	7.0 % + 4
Specifications are valid from 5 % to 100 % of amplitude range. *AC conversion: true rms* *Maximum crest factor: 3 (between 50 and 60 Hz)* *For non-sinusoidal waveforms, add ±(2 % reading + 2 % f.s.) typical* *Input impedance: 10 MΩ (nominal), < 100 pF, ac-coupled* *Common mode rejection ratio: > 60 dB at dc, 50 Hz, or 60 Hz*				

AC Current Measurement

Range 45 Hz to 2 kHz	Resolution	Accuracy, ±(% of Reading + Counts)	Typical Burden Voltage
1.000 A (Note)	0.001 A	1 % + 2	1.5 V/A
Note: 440 mA continuous, 1 A 30 seconds maximum			
Specifications are valid from 5 % to 100 % of amplitude range. *AC conversion: true rms* *Maximum crest factor: 3 (between 50 and 60 Hz)* *For non-sinusoidal waveforms, add ±(2 % reading + 2 % f.s.) typical* *Overload protection 440 mA, 1000 V fast-blow fuse*			

DC Current Measurement

Range	Resolution	Accuracy ±(% of Reading + Counts)	Typical Burden Voltage
30.000 mA	0.001 mA	0.05 % + 2	14 mV/mA
1.000 A (Note)	0.001 A	0.2 % + 2	1.5 V/A
Note: 440 mA continuous, 1 A 30 seconds maximum			
Overload protection: 440 mA, 1000 V fast-blow fuse			

Ohms Measurement

Range	Resolution	Measurement Current	Accuracy ±(% of Reading + Counts)
400.0 Ω	0. 1 Ω	220 µA	0.2 % + 2
4.000 kΩ	0.001 kΩ	60 µA	0.2 % + 1
40.00 kΩ	0.01 kΩ	6.0 µA	0.2 % + 1
400.0 kΩ	0.1 kΩ	600 nA	0.2 % + 1
4.000 MΩ	0.001 MΩ	220 nA	0.35 % + 3
40.00 MΩ	0.01 MΩ	22 nA	2.5 % + 3
Overload protection: 1000 V *Open circuit voltage: < 3.9 V*			

Frequency Counter Accuracy

Range	Resolution	Accuracy ±(% of Reading + Counts)
199.99 Hz	0.01 Hz	0.005 % + 1
1999.9 Hz	0.1 Hz	0.005 % + 1
19.999 kHz	0.001 kHz	0.005 % + 1
Display updates 3 times/second at > 10 Hz		

Frequency Counter Sensitivity

Input Range	Minimum Sensitivity (rms Sinewave) 5 Hz to 5 kHz*	
	AC	DC (approximate trigger level 5 % of full scale)
400 mV	150 mV (50 Hz to 5 kHz)	150 mV
4 V	1 V	1 V
40 V	4 V	4 V
400 V	40 V	40 V
1000 V	400 V	400 V

**Usable 0.5 Hz to 20 kHz with reduced sensitivity.*
10^6 VHz max

Diode Test and Continuity Test

Diode test indication: Displays voltage drop across device, 2.0 V full scale. Nominal test current 0.2 mA at 0.6 V. Accuracy ±(2 % + 1 count).

Continuity test indication: Continuous audible tone for test resistance < 100 Ω

Open circuit voltage: < 2.9 V

Short circuit current: 220 µA typical

Overload protection: 1000 V rms

Loop Power Supply

Loop Power Supply: Minimum 24 V@ 24 mA into 1200 Ω load

DC Current Output

Source mode:

Span: 0 mA or 4 mA to 20 mA, with overrange to 24 mA

Accuracy: 0.05 % of span[1] (span: 0 to 20 mA)

Compliance voltage: 28 V with battery voltage > ~4.5 V

[1]0.1 x specified accuracy per °C for temperatures < 18 °C or > 28 °C

Simulate Mode:

Span: 0 mA or 4 mA to 20 mA, with overrange to 24 mA

Accuracy: 0.05 % of span[1] (span: 0 to 20 mA)

Loop voltage: 24 V nominal, 48 V maximum, 15 V minimum

Compliance voltage: 21 V for 24 V supply

Burden voltage: < 3 V

[1]0.1 x specified accuracy per °C for temperatures < 18 °C or > 28 °C

General Specifications

Maximum voltage applied between any jack and earth ground: 1000 V

Storage temperature: -40 °C to 60 °C

Operating temperature: -20 °C to 55 °C

Operating altitude: 2000 meters maximum

Temperature coefficient: 0.05 x specified accuracy per °C for temperatures < 18 °C or > 28 °C

Accuracy adders for use in RF Fields: In an RF field of 3 V/m, change the accuracy specifications as follows:

For AC Volts Measurement, add 0.25 % of range
For DC Current Measurement, 30.000 mA range, add 0.14 % or range
For DC Current Output, add 0.32 % of span

Accuracy for all ProcessMeter functions is not specified in RF fields > 3 V/m.

Relative humidity: 95 % up to 30 °C, 75 % up to 40 °C, 45 % up to 50 °C, and 35 % up to 55 °C

Vibration: Random 2 g, 5 to 500 Hz

Shock: 1 meter drop test

Safety: Complies with EN61010, ANSI/ISA S82.01-1994 and CAN/CSA C22.2 No. 1010.1-92 Overvoltage Category III.

Certifications:

Power requirements: Four AA batteries (alkaline recommended)

Size: 10.0 cm X 20.3 cm X 5.0 cm (3.94 in X 8.00 in X 1.97 in)

Weight: 610 g (1.6 lbs)

Required Equipment

Equipment and software required to perform the procedures in this manual are identified in Table 2.

If the recommended equipment model is not available, in some cases other equipment can be substituted as long as it meets the specifications indicated.

⚠⚠Warning

To avoid safety hazards and equipment damage during the calibration procedure, use the specified calibration equipment listed in Table 2. Using unspecified equipment can jeopardize the calibration verification test and pose safety hazards.

Note

Unless otherwise indicated, all connection diagrams for the calibration verification tests in this manual showing a calibrator or digital multimeter use a Fluke 5500A calibrator or Agilent 3458A.

If you are using a different calibrator or DMM, make the connections appropriate for that instrument.