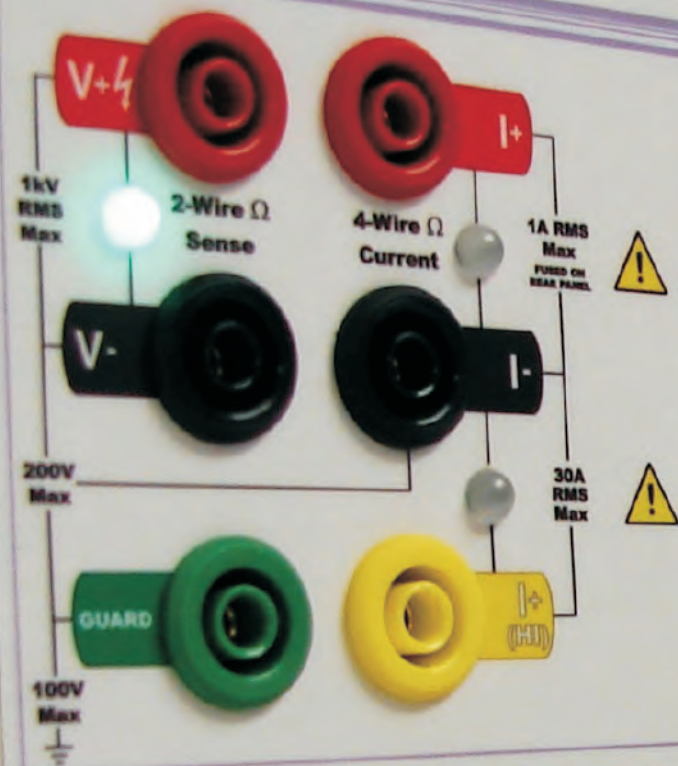


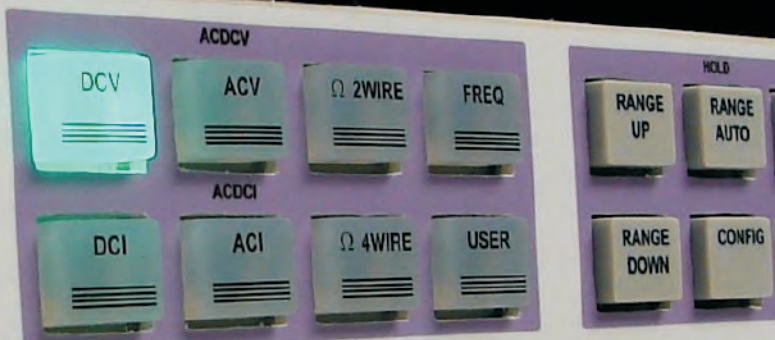
EXTENDED SPECIFICATIONS

8081 MULTIMETER

INPUTS



0.000000



MODEL 8081

4 PPM PRECISION DIGITAL MULTIMETER

TRANSMILLE

SOLUTIONS IN CALIBRATION

DC Voltage

Instrument Uncertainty Relative to Calibration Standards

Range	Full Scale	Resolution	Input Impedance	90 Day			180 Day			1 Year			2 Year		
				± (ppm Reading + ppm Range)											
100mV	120,000,000	1nV	> 10 GOhms	3.8	+	1.7	4.3	+	1.7	4.8	+	1.7	7.0	+	1.7
1V	1.200,000,00	10nV	> 10 GOhms	3.0	+	0.6	3.5	+	0.6	3.9	+	0.6	5.5	+	0.6
10V	12.000,000,0	100nV	> 10 GOhms	3.0	+	0.6	3.5	+	0.6	3.9	+	0.6	5.5	+	0.6
100V	120.000,000	1uV	10 MOhms, 1%	4.6	+	0.8	5.2	+	0.8	5.8	+	0.8	8.0	+	0.8
1000V	1.050,000,00	10uV	10 MOhms, 1%	4.6	+	1.2	5.2	+	1.2	5.8	+	1.2	8.0	+	1.2

Absolute Uncertainty (95% Confidence)

Range	1 Year					
	Tcal ± 1°C			Tcal ± 3°C		
	± (ppm Reading + ppm Range)					
100mV	7.5	+	1.7	9.0	+	1.7
1V	4.9	+	0.6	6.4	+	0.6
10V	5.4	+	0.6	6.8	+	0.6
100V	7.3	+	0.8	9.5	+	0.8
1000V	7.3	+	1.2	9.5	+	1.2

Input Protection : 1100Volts

Ratio Uncertainty

Same Range : Apply 90 Day Accuracy

Different Ranges : ± (Front Terminal Range Accuracy + Rear Terminal Range Accuracy)

Due to continuous development specifications may be subject to change.

8081 Extended Specifications

DCV : V5.1

DC Current

Instrument Uncertainty Relative to Calibration Standards

Range	Full Scale	Resolution	Input Impedance	90 Day		180 Day		1 Year		2 Year		
				± (ppm Reading + ppm Range)								
10nA	12.000,00	0.01pA	Virtual Ground	4000	+	80	4500	+	80	5000	+	80
100nA	120.000,0	0.1pA	Virtual Ground	1440	+	34	1620	+	34	1800	+	34
1uA	1.200,000	1pA	Virtual Ground	160	+	17	180	+	17	200	+	17
10uA	12,000,00	10pA	Virtual Ground	24	+	10	27	+	10	30	+	10
100uA	120,000,00	10pA	10 kOhms	5.5	+	4	6	+	4	7	+	4
1mA	1.200,000,0	100pA	1 kOhms	5.5	+	4	6	+	4	7	+	4
10mA	12,000,000	1nA	100 Ohms	7.2	+	4	8.1	+	4	9	+	4
100mA	120,000,00	10nA	10 Ohms	24	+	6	27	+	6	30	+	6
1A	1.200,000,0	100nA	0.5 Ohms	120	+	13	135	+	13	150	+	13
10A	12,000,000	1uA	10 mOhms	290	+	35	320	+	35	360	+	35
30A	30.500,00	10uA	10 mOhms	390	+	145	440	+	145	490	+	145

Absolute Uncertainty (95% Confidence)

Range	1 Year					
	Tcal ± 1°C		Tcal ± 3°C			
	± (ppm Reading + ppm Range)					
10nA	14227	+	80	15148	+	80
100nA	2454	+	34	3087	+	34
1uA	268	+	17	339	+	17
10uA	40	+	10	50	+	10
100uA	11	+	4	14	+	4
1mA	11	+	4	14	+	4
10mA	13	+	4	16	+	4
100mA	36	+	6	47	+	6
1A	174	+	13	234	+	13
10A	418	+	35	561	+	35
30A	569	+	145	764	+	145

Input Protection

Front/Rear Current Terminals 1A QB Fuse
 Front Hi Current Terminal 30A

AC Voltage

Instrument Uncertainty Relative to Calibration Standards

Range	Full Scale	Resolution	Input Impedance	Frequency	90 Day	180 Day	1 Year	2 Year
					± (% Reading + % Range)			
100mV	105,000,0	0.1uV	>1 GOhm / 90pF	10Hz to 40Hz	0.040 + 0.015	0.045 + 0.015	0.05 + 0.015	0.070 + 0.015
				40Hz to 200Hz	0.017 + 0.009	0.019 + 0.009	0.021 + 0.009	0.029 + 0.009
				200Hz to 1kHz	0.014 + 0.008	0.015 + 0.008	0.017 + 0.008	0.024 + 0.008
				1kHz to 2kHz	0.014 + 0.008	0.015 + 0.008	0.017 + 0.008	0.024 + 0.008
				2kHz to 20kHz	0.020 + 0.01	0.023 + 0.01	0.025 + 0.010	0.035 + 0.010
20kHz to 100kHz	0.048 + 0.05	0.054 + 0.05	0.06 + 0.050	0.080 + 0.050				
1V	1.050,000	1uV	>1 GOhm / 90pF	10Hz to 40Hz	0.030 + 0.015	0.036 + 0.015	0.04 + 0.015	0.060 + 0.015
10V *	10.500,00	10uV	>1 GOhm / 90pF	40Hz to 200Hz	0.015 + 0.006	0.017 + 0.006	0.019 + 0.006	0.027 + 0.006
				200Hz to 1kHz	0.012 + 0.006	0.014 + 0.006	0.015 + 0.006	0.021 + 0.006
				1kHz to 2kHz	0.012 + 0.006	0.014 + 0.006	0.015 + 0.006	0.021 + 0.006
				2kHz to 20kHz	0.020 + 0.01	0.023 + 0.01	0.025 + 0.010	0.035 + 0.010
				20kHz to 100kHz	0.048 + 0.05	0.054 + 0.05	0.06 + 0.050	0.084 + 0.050
				100kHz to 1MHz*	0.800 + 2.5	0.900 + 2.5	1 + 2.5	1.400 + 2.5
100V	105,000,0	100uV	1 MOhm / 130pF	10Hz to 40Hz	0.040 + 0.015	0.045 + 0.015	0.05 + 0.015	0.070 + 0.015
1000V *	1050,000	1mV	1 MOhm / 130pF	40Hz to 200Hz	0.016 + 0.009	0.018 + 0.009	0.02 + 0.009	0.028 + 0.009
				200Hz to 1kHz	0.014 + 0.007	0.016 + 0.007	0.018 + 0.007	0.025 + 0.007
				1kHz to 2kHz	0.014 + 0.007	0.016 + 0.007	0.018 + 0.007	0.025 + 0.007
				2kHz to 20kHz	0.024 + 0.01	0.027 + 0.01	0.03 + 0.010	0.042 + 0.010
				20kHz to 50kHz	0.064 + 0.05	0.072 + 0.05	0.08 + 0.050	0.112 + 0.050

Absolute Uncertainty (95% Confidence)

Range	Frequency	1 Year	
		Tcal ± 1°C	Tcal ± 3°C
		± (% Reading + % Range)	
100mV	10Hz to 40Hz	0.04 + 0.015	0.08 + 0.015
	40Hz to 200Hz	0.03 + 0.009	0.03 + 0.009
	200Hz to 1kHz	0.03 + 0.008	0.03 + 0.008
	1kHz to 2kHz	0.04 + 0.008	0.03 + 0.008
	2kHz to 20kHz	0.04 + 0.01	0.04 + 0.01
20kHz to 100kHz	0.08 + 0.050	0.09 + 0.05	
1V	10Hz to 40Hz	0.05 + 0.015	0.06 + 0.015
10V *	40Hz to 200Hz	0.03 + 0.006	0.03 + 0.006
	200Hz to 1kHz	0.02 + 0.006	0.02 + 0.006
	1kHz to 2kHz	0.02 + 0.006	0.02 + 0.006
	2kHz to 20kHz	0.04 + 0.01	0.04 + 0.01
	20kHz to 100kHz	0.08 + 0.050	0.09 + 0.05
	100kHz to 1MHz*	1.16 + 2.5	1.56 + 2.5
100V	10Hz to 40Hz	0.07 + 0.015	0.08 + 0.015
1000V *	40Hz to 200Hz	0.03 + 0.009	0.03 + 0.009
	200Hz to 1kHz	0.02 + 0.007	0.03 + 0.007
	1kHz to 2kHz	0.04 + 0.007	0.03 + 0.007
	2kHz to 20kHz	0.05 + 0.010	0.05 + 0.01
	20kHz to 50kHz	0.10 + 0.05	0.12 + 0.05

*1V Range to 1MHz : 10V Range to 200kHz

* 100V Range to 50kHz :1000V Range to 10kHz

All specifications apply from 10% of full scale + 3mV

Due to continuous development specifications may be subject to change.

8081 Extended Specifications

ACV : V5.1

AC Current

Instrument Uncertainty Relative to Calibration Standards

Range	Full Scale	Resolution	Input Impedance	Frequency	90 Day		180 Day		1 Year		2 Year		
					± (% Reading + % Range)								
100uA	100.500,0	0.1nA	10 kOhms	10Hz to 40Hz	0.040	+	0.015	0.045	+	0.015	0.05	+	0.015
1mA	1.050,000	1nA	1 kOhm	40Hz to 1kHz	0.024	+	0.012	0.027	+	0.012	0.03	+	0.012
10mA	10.500,00	10nA	100 Ohms	1kHz to 10kHz	0.056	+	0.030	0.063	+	0.030	0.07	+	0.030
100mA	105.000,0	100nA	10 Ohms										
1A	1.050,000	1uA	0.5 Ohms	10Hz to 40Hz	0.048	+	0.020	0.054	+	0.020	0.06	+	0.020
				40Hz to 1kHz	0.032	+	0.015	0.036	+	0.015	0.04	+	0.015
				1kHz to 10kHz	0.056	+	0.050	0.063	+	0.050	0.07	+	0.050
10A	10.500,00	10uA	10 mOhms	10Hz to 40Hz	0.064	+	0.040	0.072	+	0.040	0.08	+	0.040
30A	30.500,0	100uA	10 mOhms	40Hz to 1kHz	0.056	+	0.030	0.063	+	0.030	0.07	+	0.030

Absolute Uncertainty (95% Confidence)

Range	Frequency	1 Year					
		Tcal ± 1°C		Tcal ± 3°C			
		± (% Reading + % Range)					
100uA	10Hz to 40Hz	0.07	+	0.015	0.09	+	0.015
1mA	40Hz to 1kHz	0.04	+	0.012	0.05	+	0.012
10mA	1kHz to 10kHz	0.09	+	0.03	0.12	+	0.03
100mA							
1A	10Hz to 40Hz	0.09	+	0.02	0.11	+	0.02
	40Hz to 1kHz	0.06	+	0.015	0.07	+	0.015
	1kHz to 10kHz	0.10	+	0.05	0.13	+	0.05
10A	10Hz to 40Hz	0.14	+	0.04	0.16	+	0.04
30A	40Hz to 1kHz	0.10	+	0.03	0.12	+	0.03

All specifications apply from 10% of full scale + 3mV

Resistance

Instrument Uncertainty Relative to Calibration Standards

Range	Full Scale	Resolution	Measurement Current	90 Day		180 Day		1 Year		2 Year		
				± (ppm Reading + ppm Range)								
1 Ohm	1.200,000,00	0.01 uOhm	100mA	12.0	+	6.0	13.0	+	6.0	15.0	+	6.0
10 Ohm	12.000,000,0	0.1 uOhm	10mA	8.0	+	3.0	9.0	+	3.0	10.0	+	3.0
100 Ohm	120.000,000	1 uOhm	10mA	7.0	+	1.0	8.0	+	1.0	9.0	+	1.0
100 Ohm Low Current	120.000,000	1 uOhm	1mA	8.0	+	7.0	9.0	+	7.0	10.0	+	7.0
1 kOhm	1.200,000,00	10 uOhms	10mA	6.5	+	0.8	7.0	+	0.8	8.0	+	0.8
1 kOhm Low Current	1.200,000,00	10 uOhms	1mA	7.5	+	3.0	8.0	+	3.0	9.0	+	3.0
10 kOhm	12.000,000,0	100 uOhms	1mA	7.5	+	0.8	8.5	+	0.8	9.5	+	0.8
10 kOhm Low Current	12.000,000,0	100 uOhms	100uA	8.5	+	8.0	9.5	+	8.0	10.5	+	8.0
100 kOhm	120.000,000	1 mOhms	100uA	8.0	+	0.8	9.0	+	0.8	10.0	+	0.8
1 MOhm*	1.200,000,00	10 mOhms	10uA	9.0	+	2.0	10.0	+	2.0	11.0	+	2.0
10 MOhm*	12.000,000,0	100 mOhms	1uA	12.0	+	8.0	13.5	+	8.0	15.0	+	8.0

Absolute Uncertainty (95% Confidence)

Range	1 Year					
	Tcal ± 1°C			Tcal ± 3°C		
	± (ppm Reading + ppm Range)					
1 Ohm	17.6	+	6	23.5	+	6
10 Ohm	11.9	+	3	15.8	+	3
100 Ohm	10.6	+	1.0	14.1	+	1
100 Ohm Low Current	11.7	+	7	15.7	+	7
1 kOhm	9.4	+	0.8	12.5	+	0.8
1 kOhm Low Current	10.5	+	3	14.1	+	3
10 kOhm	11.1	+	0.8	14.9	+	0.8
10 kOhm Low Current	12.2	+	8	16.4	+	8
100 kOhm	11.8	+	8	15.7	+	8
1 MOhm *	14.1	+	2	18.2	+	2
10 MOhm*	18.0	+	8	23.9	+	8

* 2 Wire measurement only

Due to continuous development specifications may be subject to change.

8081 Extended Specifications

Resistance : V5.1

Electrometer Resistance

Instrument Uncertainty Relative to Calibration Standards

Voltage Setting*	Current Range	Resistance Range	Resolution	90 Day	180 Day	1 Year	2 Year
				± ppm Reading			
10V	10uA	800kOhm - 9MOhm					
	1uA	8M Ohm - 90 Mohm					
	100nA	80 Mohm - 900 Mohm					
	10nA	800 Mohm - 1TOhm					
50V	10uA	5M Ohm - 45 MOhm	10 Ohm	112	126	140	196
	1uA	40M Ohm - 450 Mohm	100 Ohm	360	405	450	630
	100nA	400 Mohm - 4.5GOhm	1kOhm	1440	1620	1800	2520
	10nA	4 Gohm - 1TOhm	100kOhm	18400	20700	23000	32200
100V	10uA	8M Ohm - 90 Mohm	10 Ohm	112	126	140	196
	1uA	80 Mohm - 900 Mohm	100 Ohm	332.8	374.4	416	582.4
	100nA	800Mohm - 9GOhm	1kOhm	1448	1629	1810	2534
	10nA	8GOhm - 2TOhm	100kOhm	18400	20700	23000	32200
150V	10uA	12M Ohm - 135 MOhm	10 Ohm	108	121.5	135	189
	1uA	120M Ohm - 1350 Mohm	100 Ohm	368	414	460	644
	100nA	1200 Mohm - 13.5GOhm	1kOhm	1520	1710	1900	2660
	10nA	12 Gohm - 2TOhm	100kOhm	14134	15900	17667	24734
200V	10uA	20M Ohm - 180 MOhm	10 Ohm	108	121.5	135	189
	1uA	160M Ohm - 1800 Mohm	100 Ohm	344	387	430	602
	100nA	1600 Mohm - 18GOhm	1kOhm	1448	1629	1810	2534
	10nA	16 Gohm - 2TOhm	100kOhm	12000	13500	15000	21000
250V	10uA	25M Ohm - 225 MOhm	10 Ohm	105.6	118.8	132	184.8
	1uA	200M Ohm - 2250 Mohm	100 Ohm	344	387	430	602
	100nA	2000 Mohm - 22.5GOhm	1kOhm	1448	1629	1810	2534
	10nA	20 Gohm - 2TOhm	100kOhm	10720	12060	13400	18760
300V	10uA	30M Ohm - 270 MOhm	10 Ohm	105.6	118.8	132	184.8
	1uA	240M Ohm - 2700 Mohm	100 Ohm	332	373.5	415	581
	100nA	2400 Mohm - 27GOhm	1kOhm	1448	1629	1810	2534
	10nA	24 Gohm - 2TOhm	100kOhm	9840	11070	12300	17220

Temperature (Thermocouple)

Thermocouple	Range	1 Year Accuracy *To Cal Standards
Thermocouple Type		
K	-140°C to 1340°C	0.08°C
J	-210°C to 1200°C	0.08°C
B	300°C to 500°C	0.25°C
	500°C to 1820°C	0.15°C
E	0°C to 800°C	0.05°C
R	-50°C to 600°C	0.25°C
	600°C to 1760°C	0.15°C
S	0°C to 1760°C	0.15°C
N	-200°C to 1300°C	0.09°C
T	-200°C to 400°C	0.08°C

Cold Junction Compensation

Using calibrated PT100 probe in rear terminal connections = 0.05°C

Using TCLEAD = 0.1°C

Due to continuous development specifications may be subject to change.

8081 Extended Specifications

Thermocouple : V5.1

Frequency

Signal Amplitude Range	5% of range to full scale
Resolution	0.1Hz (after 5 samples)
Frequency Range	1Hz to 1MHz
Accuracy (1 Year)*	2ppm \pm 2 Digits
Sample Interval	1s

Phase Specifications (Option)

Voltage Range : 20mV - 1000V

Current Range : 20uA - 30A

Frequency Range : 40Hz - 1kHz

Phase Angle	Resolution	Accuracy
0° to 359.9°	0.1°	0.5° + 6us*

*6us represents 0.109° at 50Hz or 0.87° at 400Hz

Reading Speed* (Default setting highlighted in Bold)

4.5 Digit	125ms , 250ms, 500ms, 1s, 2s, 4s, 8s, 16s, 32s, 64s
5.5 Digit	125ms, 250ms , 500ms, 1s, 2s, 4s, 8s, 16s, 32s, 64s
6.5 Digit	125ms, 250ms, 500ms , 1s, 2s, 4s, 8s, 16s, 32s, 64s
7.5 Digit	1s , 2s, 4s, 8s, 16s, 32s, 64s
8.5 Digit	4s , 8s, 16s, 32s, 64s

*Dynamic filter available for all resolutions