

# MODEL 8081

## EXTENDED SPECIFICATIONS



**THE METROLOGISTS DMM**

**INTEGRATED REFERENCE SOLUTION**



THE QUEEN'S AWARDS  
FOR ENTERPRISE:  
INNOVATION  
2008

DC Voltage: 10nV to 1050V in 5 Ranges.				Stability					
Range	Full Scale	Resolution	Input Impedance	24 Hour		90 Day		1 Year	
				ppm	+ Floor	ppm	+ Floor	ppm	+ Floor
100mV	105,000,00	10nV	> 10Gohms	1.5	+ 0.2uV	3	+ 0.2uV	5	+ 0.2uV
1V	1.050,000,00	10nV	> 10Gohms	1.2	+ 0.5uV	2.4	+ 0.5uV	4	+ 0.5uV
10V	10.500,000,0	100nV	> 10Gohms	1.2	+ 5uV	2.4	+ 5uV	4	+ 5uV
100V	105000000	1uV	10MOhm, 1%	1.8	+ 50uV	3.6	+ 50uV	6	+ 50uV
1000V	1050,000,00	10uV	10MOhm, 1%	1.8	+ 0.8mV	3.6	+ 0.8mV	6	+ 0.8mV

Temperature coefficient outside 20 to 23°C < 0.8ppm/°C

Input Protection : 1100Volts

Reading Rates : 4.5 digits = 100ms • 5.5 digits = 250ms • 6.5 digits = 250ms • 7.5 digits = 1.5s • 8.5 digits = 4s

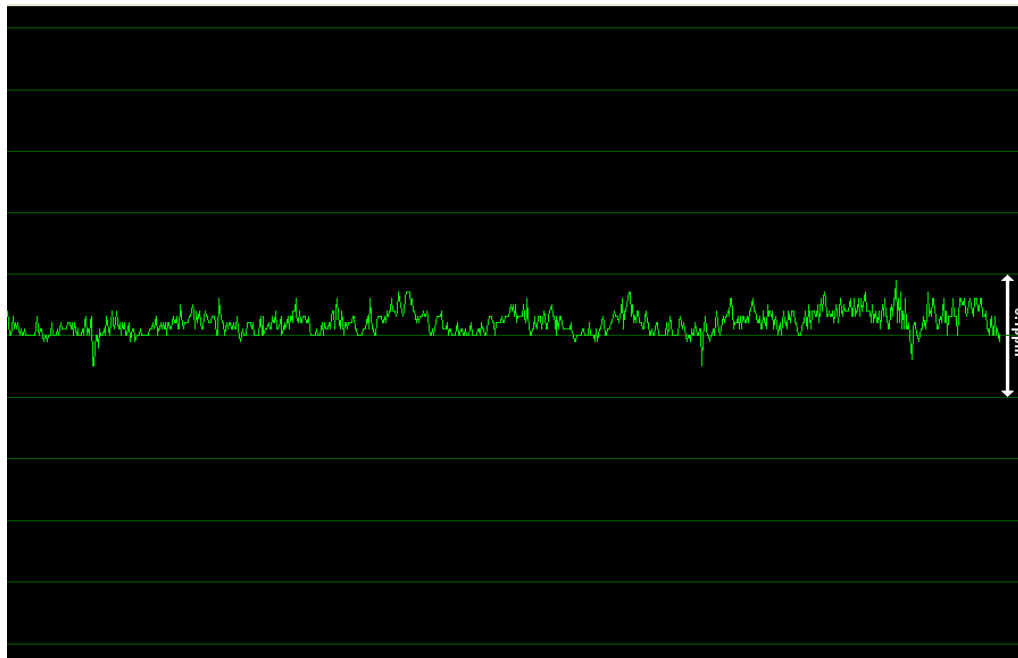


Figure 1 : 10V Stability (12 Hour Period)

**Preliminary Specifications**

Due to continuous development specifications may be subject to change.

8081 Extended Specifications : V1.30

DC Current 0.1pA to 30 Amps in 11 Ranges				Stability					
Range	Full Scale	Resolution	Input Impedance	24 Hour		90 Day		1 Year	
				ppm	+ Floor	ppm	+ Floor	ppm	+ Floor
<b>10nA</b>	10.500,0	0.1pA	Virtual Ground	28.5	+ 0.8pA	57	+ 0.8pA	95	+ 0.8pA
<b>100nA</b>	105.000	1pA	Virtual Ground	10.5	+ 3.4pA	21	+ 3.4pA	35	+ 3.4pA
<b>1uA</b>	1.050,000	1pA	Virtual Ground	7.5	+ 17pA	15	+ 17pA	25	+ 17pA
<b>10uA</b>	10,500,00	10pA	Virtual Ground	6	+ 90pA	12	+ 90pA	20	+ 90pA
<b>100uA</b>	105,000,00	10pA	1Ohms	3	+ 0.6nA	6	+ 0.6nA	10	+ 0.6nA
<b>1mA</b>	1.050,000,0	100pA	1Ohms	3.3	+ 5nA	6.6	+ 5nA	11	+ 5nA
<b>10mA</b>	10.500,000	1nA	1Ohms	3.6	+ 60nA	7.2	+ 60nA	12	+ 60nA
<b>100mA</b>	105,000,00	10nA	1Ohms	9	+ 1.1uA	18	+ 1.1uA	30	+ 1.1uA
<b>1A</b>	1.050,000,0	100nA	0.2Ohms	45	+ 24uA	90	+ 24uA	150	+ 24uA
<b>10A</b>	10.500,000	1uA	10mOhms	108	+ 0.6mA	216	+ 0.6mA	360	+ 0.6mA
<b>30A</b>	30.500,00	10uA	10mOhms	147	+ 9mA	294	+ 9mA	490	+ 9mA

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8081 Extended Specifications : V1.30

<b>Resistance : 0.1uOhm to 1TOhm in 13 Ranges</b>				<b>Stability</b>					
<b>Range</b>	<b>Full Scale</b>	<b>Resolution</b>	<b>Current/Voltage</b>	<b>24 Hour</b>		<b>90 Day</b>		<b>1 Year</b>	
				ppm	+ Floor	ppm	+ Floor	ppm	+ Floor
<b>1 Ohm</b>	1.050,000,0	0.1uOhm	100mA	4.5	7uR	9	7uR	15	+ 7uR
<b>10 Ohm</b>	10.500,000	1uOhm	10mA	3.6	60uR	7.2	60uR	12	+ 60uR
<b>100 Ohm</b>	105.000,000	1uOhm	10mA	2.7	120uR	5.4	120uR	9	+ 120uR
<b>1 kOhm</b>	1.050,000,00	10uOhm	10mA	2.4	0.7mR	4.8	0.7mR	8	+ 0.7mR
<b>10 kOhm</b>	10.500,000,0	100uOhm	1mA	3	5mR	6	5mR	10	+ 5mR
<b>100 kOhm</b>	105.000,000	1mOhm	100uA	3	0.15	6	0.15	10	+ 0.15
<b>1 MOhm</b>	1.050,000,00	10mOhm	10uA	3.6	2	7.2	2	12	+ 2
<b>10 MOhm</b>	10.500,000	1Ohm	1uA	4.5	20	9	20	15	+ 20
<b>100 MOhm</b>	105.000,0	100Ohm	300V*	24	0.3k	48	0.3k	80	+ 0.3k
<b>1 GOhm</b>	1.050,000	1kOhm	300V*	84	6k	168	6k	280	+ 6k
<b>10 GOhm</b>	10.500,00	10kOhm	300V*	534	120k	1068	120k	1780	+ 120k
<b>100 GOhm</b>	105.000,0	100kOhm	300V*	1500	1.9M	3000	1.9M	5000	+ 1.9M
<b>1 TOhm</b>	1.050,000,00	1MOhm	300V*	3000	35M	6000	35M	10000	+ 35M

\* Measurement Voltage 25V to 300V in 25V steps  
 100MOhms to 1TOhm : BNC Screened Inputs

#### **Preliminary Specifications**

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 8081 Extended Specifications : V1.30

<b>AC Voltage 0.1uV to 1000 Volts in 5 Ranges</b>				<b>Stability</b>					
<b>Range</b>	<b>Full Scale</b>	<b>Resolution</b>	<b>Input Impedance</b>	<b>24 Hour</b>		<b>90 Day</b>		<b>1 Year</b>	
				<b>%Read</b>	<b>+ Floor</b>	<b>%Read</b>	<b>+ Floor</b>	<b>%Read</b>	<b>+ Floor</b>
<b>100mV</b>	105,000,0	0.1uV	>1GOhm / 90pF						
10Hz to 40Hz				0.15	+ 25uV	0.3	+ 25uV	0.5	+ 25uV
40Hz to 400Hz				0.024	+ 23uV	0.048	+ 23uV	0.08	+ 23uV
400Hz to 10KHz				0.009	+ 18uV	0.018	+ 18uV	0.03	+ 18uV
10kHz to 100kHz				0.18	+ 90uV	0.36	+ 90uV	0.6	+ 90uV
<b>1V</b>	1.050,000	1uV	>1GOhm / 90pF						
10Hz to 40Hz				0.12	+ 150uV	0.24	+ 150uV	0.4	+ 150uV
40Hz to 400Hz				0.021	+ 130uV	0.042	+ 130uV	0.07	+ 130uV
400Hz to 10kHz				0.006	+ 100uV	0.012	+ 100uV	0.02	+ 100uV
10kHz to 100kHz				0.18	+ 480uV	0.36	+ 480uV	0.6	+ 480uV
100kHz to 1MHz				tba	+ tba	tba	+ tba	tba	+ tba
<b>10V</b>	10.500,00	10uV	>1GOhm / 90pF						
10Hz to 40Hz				0.12	+ 1.5mV	0.24	+ 1.5mV	0.4	+ 1.5mV
40Hz to 400Hz				0.021	+ 1.3mV	0.042	+ 1.3mV	0.07	+ 1.3mV
400Hz to 10kHz				0.006	+ 1mV	0.012	+ 1mV	0.02	+ 1mV
10kHz to 100kHz				0.18	+ 4.9mV	0.36	+ 4.9mV	0.6	+ 4.9mV
100kHz to 1MHz				tba	+ tba	tba	+ tba	tba	+ tba
<b>100V</b>	105.000,0	100uV	1MOhm / 130pF						
10Hz to 40Hz				0.12	+ 22mV	0.24	+ 22mV	0.4	+ 22mV
40Hz to 1kHz				0.015	+ 12mV	0.03	+ 12mV	0.05	+ 12mV
1kHz to 50kHz				0.06	+ 70mV	0.12	+ 70mV	0.2	+ 70mV
<b>1000V</b>	1050.000	1mV	1MOhm / 130pF						
10Hz to 40Hz				0.12	+ 200mV	0.24	+ 200mV	0.4	+ 200mV
40Hz to 1kHz				0.015	+ 120mV	0.03	+ 120mV	0.05	+ 120mV
1kHz to 50kHz				0.06	+ 700mV	0.12	+ 700mV	0.2	+ 700mV

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8081 Extended Specifications : V1.30

<b>AC Current 100uA to 30A in 7 Ranges</b>				<b>Stability</b>					
<b>Range</b>	<b>Full Scale</b>	<b>Resolution</b>	<b>Input Impedance</b>	<b>24 Hour</b>		<b>90 Day</b>		<b>1 Year</b>	
				<b>%Read</b>	<b>+ Floor</b>	<b>%Read</b>	<b>+ Floor</b>	<b>%Read</b>	<b>+ Floor</b>
<b>100uA</b>	100.500,0	0.1nA	10k $\Omega$						
10Hz to 40Hz				0.06	20nA	0.12	20nA	0.2	20nA
40Hz to 1kHz				0.015	20nA	0.03	20nA	0.05	20nA
1kHz to 10kHz				0.021	30nA	0.042	30nA	0.07	30nA
<b>1mA</b>	1.050,000	1nA	1k $\Omega$						
10Hz to 40Hz				0.045	200nA	0.09	200nA	0.15	200nA
40Hz to 1kHz				0.012	200nA	0.024	200nA	0.04	200nA
1kHz to 10kHz				0.021	300nA	0.042	300nA	0.07	300nA
<b>10mA</b>	10.500,00	10nA	100 $\Omega$						
10Hz to 40Hz				0.045	2uA	0.09	2uA	0.15	2uA
40Hz to 1kHz				0.012	2uA	0.024	2uA	0.04	2uA
1kHz to 10kHz				0.021	30uA	0.042	30uA	0.07	30uA
<b>100mA</b>	105.000,0	100nA	10 $\Omega$						
10Hz to 40Hz				0.045	20uA	0.09	20uA	0.15	20uA
40Hz to 1kHz				0.012	20uA	0.024	20uA	0.04	20uA
1kHz to 10kHz				0.021	30uA	0.042	30uA	0.07	30uA
<b>1A</b>	1.050,000	1uA	0.5 $\Omega$						
10Hz to 40Hz				0.06	200uA	0.12	200uA	0.2	200uA
40Hz to 1kHz				0.018	200uA	0.036	200uA	0.06	200uA
1kHz to 10kHz				0.03	300uA	0.06	300uA	0.1	300uA
<b>10A</b>	10.500,00	10uA	10m $\Omega$						
10Hz to 40Hz				0.09	2mA	0.18	2mA	0.3	2mA
40Hz to 1kHz				0.024	2mA	0.048	2mA	0.08	2mA
<b>30A</b>	30.500,0	100uA	10m $\Omega$						
10Hz to 40Hz				0.09	9mA	0.18	9mA	0.3	9mA
40Hz to 1kHz				0.03	9mA	0.06	9mA	0.1	9mA

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8081 Extended Specifications : V1.30

<b>Frequency 1Hz to 2MHz</b>	
<b>Signal Amplitude Range</b>	5%
<b>Resolution</b>	7 Digits to 4 Digits
<b>Frequency Range</b>	1Hz to 2MHz
<b>Accuracy (1 Year)</b>	5ppm $\pm$ 2 Digits
<b>Sample Interval</b>	1s

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