

## 9. SPECIFICATIONS

### 9.1 DC Voltage (DC V)

- Range :

Range	Integral Time 100 / 20 / 16.7ms*		Integral Time 2.5ms		Input Resistance	Max. Input
	Max. Indication	Resolution	Max. Indication	Resolution		
200mV	199.999	1 $\mu$ V	199.99	10 $\mu$ V	>1G $\Omega$	$\pm$ 1000 V peak(for 10 seconds) $\pm$ 600 V peak continuous (Between Hi and Lo) $\pm$ 1000 V peak continuous
2000mV	1999.99	10 $\mu$ V	1999.9	100 $\mu$ V		
20V	19.9999	100 $\mu$ V	19.999	1mV	10M $\Omega$	
200V	199.999	1mV	199.99	10mV		
1000V	1100.00	10mV	1100.0	100mV	$\pm$ 1%	

- Accuracy (Integral Time 100 ms) :  $\pm$  (% of Reading + Digits)

Range	24h, 23 $\pm$ 1 $^{\circ}$ C	90 Days, 23 $\pm$ 5 $^{\circ}$ C	One Year, 23 $\pm$ 5 $^{\circ}$ C	Temperature Coefficient (5 to 18, 28 to 40 $^{\circ}$ C)
200mV	0.005 + 6 (4)	0.008 + 8 (4)	0.011 + 8 (4)	0.001 + 1 (.2)
2000mV	0.0035 + 3 (3)	0.005 + 3 (3)	0.008 + 3 (3)	0.0007 + .5 (.1)
20V	0.007 + 4 (4)	0.012 + 4 (4)	0.02 + 4 (4)	0.0012 + .5 (.1)
200V	0.006 + 3 (3)	0.011 + 3 (3)	0.019 + 3 (3)	0.0012 + .5 (.1)
1000V	0.008 + 3 (3)	0.013 + 3 (3)	0.021 + 3 (3)	0.0015 + .5 (.1)

- Accuracy for 24h, 23  $\pm$  1 $^{\circ}$ C is the value for calibration standard.
  - Using Auto Zero ON and Null function
  - When the integral time is 20/16.7ms, add 2 to the digit value at 100ms.
  - The value in ( ) shows the values of digits when the integral time is 2.5ms digits are displayed.
  - When Auto Zero is OFF, add the temperature coefficient  $\pm$  (0.003% of range + 40  $\mu$ V) /  $^{\circ}$ C (at 5 to 40 $^{\circ}$ C).
  - Common Mode Voltage-Rejection Ratio : 120 dB or more  
: Integral time ; 100, 20/16.7ms,  
Rs = 1k $\Omega$  , 50/60Hz  $\pm$  0.1%
  - Normal Mode Voltage-Rejection Ratio : 60dB or more  
: Integral time ; 100, 20 / 16.7ms, 50/60Hz  
 $\pm$  0.1%
  - A Maximum Applied Voltage : 500V peak between Lo and case
- \* : Integral time of 16.7ms implies 16.666 ..... ms.

## 9.2 DC Current (DC A)

• Range :

Range	Integral Time 100/20/16.7ms*		Integral Time 2.5ms		Input Resistance
	Max. Indication	Resolution	Max. Indication	Resolution	
2mA	1.99999	10nA	1.9999	100nA	<110Ω
20mA	19.9999	100nA	19.999	1μA	<11Ω
200mA	199.999	1μA	199.99	10μA	<1.2Ω
2000mA	1999.99	10μA	1999.9	100μA	<0.3Ω
20A (Model 7552 Only)	19.9999	100μA	19.999	1mA	<0.01Ω

• Accuracy (Integral Time 100ms) : ± (% of Reading + Digits)

Range	One Year, 23 ± 5°C
2mA	0.07 + 100
20mA	0.07 + 20
200mA	0.07 + 20
2000mA	0.15 + 40
20A (Model 7552 Only)	0.4 + 200

- Auto Zero : ON
- When the integral time is 20/16.7ms, add 20 to the value of digits for 100ms.
- Temperature Coefficient : ± (1/10 of measuring accuracy) / °C
- Permissible Current : Model 7551 ; 2A (2A fuse incorporated)  
: Model 7552 ; 2 to 2000mA range ... 2A ( 2A fuse incor-  
porated )  
20A range ..... 20A (no fuse)

\* : Integral time of 16.7ms implies 16.666 ... ms.

## 9.3 Resistance Measurement (OHM)

- Range :

Range	Integral Time 100 / 20 / 16.7ms*		Integral Time 2.5ms		Measuring Current
	Max. Indication	Resolution	Max. Indication	Resolution	
200Ω	199.999	1mΩ	199.99	10mΩ	1mA
2000Ω	1999.99	10mΩ	1999.9	100mΩ	1mA
20kΩ	19.9999	100mΩ	19.999	1Ω	100μA
200kΩ	199.999	1Ω	199.99	10Ω	10μA
2000kΩ	1999.99	10Ω	1999.9	100Ω	1μA
20MΩ	19.9999	100Ω	19.999	1kΩ	100nA
200MΩ	199.999	1kΩ	199.99	10kΩ	50nA

- Accuracy (4 Wire System, Integral Time 100ms) : ± (% of Reading + Digits)

Range	24h, 23±1°C	90 Days, 23±5°C	One Year, 23±5°C	Temperature Coefficient (5 to 18, 28 to 40 °C)
200Ω	0.008 + 6 (4)	0.014 + 7 (4)	0.018 + 7 (4)	0.002 + 1 (1)
2000Ω	0.007 + 4 (3)	0.011 + 6 (3)	0.015 + 6 (3)	0.0015 + 1 (.2)
20kΩ	0.007 + 3 (3)	0.011 + 5 (3)	0.015 + 5 (3)	0.0015 + 1 (.2)
200kΩ	0.008 + 3 (3)	0.012 + 5 (3)	0.016 + 5 (3)	0.0015 + 1 (.2)
2000kΩ	0.03 + 15 (20)	0.05 + 20 (30)	0.05 + 20 (30)	0.005 + 1 (.2)
20MΩ	0.25 + 30	0.25 + 30	0.25 + 30	0.02 + 3
200MΩ	2 + 200	2 + 200	2 + 200	0.05 + 5

- Accuracy for 24h, 23 ± 1°C is the value for calibration standard.
- Model 7551 is supplied only with 2-wire type. Add 4mΩ / °C for 2-wire type.
- Using Auto Zero ON and Null function
- When the integral time is 20/16.7ms, add 2 to the digit value at 100ms.
- The value in ( ) shows the values of digits when the integral time is 2.5ms.
- Accuracy for ranges 20MΩ and 200MΩ is not specified if the integral time is 2.5ms.
- When Auto Zero is OFF, the temperature coefficient is ± (0.015% of of range) / °C in 200Ω range. In other ranges, add ± (0.005% of range) / °C (at 5 to 40°C)
- The effect of leadwires is not included.
- Open terminal Voltage : Max. 10V (Max. 12.5V in 200MΩ range)
- Max. Input : ± 300V peak or 300V RMS (between Hi and Lo)
- Response Time : 2000kΩ / 20MΩ range ; 0.4 second or less  
200MΩ range ; 5 seconds or less

\* : Integral time 16.7ms implies 16.666 ... ms.

## 9.4 AC Voltage (AC V)

- Range :

Range	Integral Time 100/20/16.7ms*		Integral Time 2.5ms		Input Resistance	Max. Input
	Max. Indication	Resolution	Max. Indication	Resolution		
200mV	199.999	1 $\mu$ V	199.99	10 $\mu$ V	1 M $\Omega$ $\pm$ 2% Approx. 150 pF	700 V RMS or $\pm$ 1000 V peak (Between Hi and Lo)
2000mV	1999.99	10 $\mu$ V	1999.9	100 $\mu$ V		
20V	19.9999	100 $\mu$ V	19.999	1mV		
200V	199.999	1mV	199.99	10mV		
700V	700.00	10mV	700.0	100mV		

- Accuracy (Integral Time 100ms) :  $\pm$  (% of Reading + Digits), 90 Days, 23  $\pm$  5°C

Range	20Hz to 30Hz	30Hz to 45Hz	45Hz to 10kHz	10kHz to 20kHz	20kHz to 50kHz	50kHz to 100kHz
200mV	0.9 + 200	0.5 + 200	0.4 + 200	0.5 + 300	0.8 + 500	2 + 500
2000mV	0.8 + 100	0.4 + 100	0.2 + 100	0.4 + 200	0.6 + 500	2 + 500
20V	0.8 + 100	0.4 + 100	0.2 + 100	0.4 + 200	0.6 + 500	2 + 500
200V	1.0 + 100	0.4 + 100	0.3 + 100	0.4 + 200	0.8 + 500	3 + 500
600V	1.0 + 100	0.4 + 100	0.4 + 100	0.6 + 300		

- Auto Zero : ON
- When the integral time is 20/16.7ms, add 20 to the digit value at 100ms.
- AC Coupling : Average rectifying method (RMS calibrated) (Model 7551)  
True RMS value method (Model 7552)
- Input is defined as 5 to 100% of range, sinusoidal
- Response Time : 400ms or less (Until  $\pm$  0.2% of the final value is reached)
- Crest Factor : 3 (Model 7552 only)  
(at full scale ; 2 at full scale for 700V range)
- Temperature Coefficient :  $\pm$  (1/10 of the measuring accuracy)/°C

\* : Integral time of 16.7ms implies 16.666 ... ms.

## 9.5 AC Current (AC A)

- Range

Range	Integral Time 100 / 20 / 16.7ms*		Integral Time 2.5ms		Input Resistance (50 Hz)
	Max. Indication	Resolution	Max. Indication	Resolution	
2mA	1.99999	10nA	1.9999	100nA	<110Ω
20mA	19.9999	100nA	19.999	1μA	<11Ω
200mA	199.999	1μA	199.99	10μA	<1.2Ω
2000mA	1999.99	10μA	1999.9	100μA	<0.3Ω
20A (Model 7552 Only)	19.9999	100μA	19.999	1mA	<0.01Ω

- Accuracy (Integral Time 100ms) :  $\pm$  (% of Reading + Digits), One Year,  $23 \pm 5^\circ\text{C}$

Range	20Hz to 30Hz	30Hz to 45Hz	45Hz to 2kHz	2kHz to 5kHz
2mA	1.5 + 350	0.8 + 250	0.5 + 300	0.8 + 300
20mA	1.3 + 300	0.8 + 200	0.5 + 200	0.8 + 200
200mA	1.3 + 300	0.8 + 200	0.5 + 200	0.8 + 200
2000mA	1.5 + 300	1.5 + 200	1.0 + 200	1.5 + 200
20A (Model 7552 only)	2 + 300	2 + 200	1.2 + 300	—

- Auto Zero : ON
- When the integral time is 20/16.7ms, add 20 to the digits value at 100ms.
- AC Coupling : Average rectifying method (RMS calibrated) (Model 7551)  
True RMS value method (Model 7552)
- Input is defined as 5 to 100% of ranges, sinusoidal
- Response Time : 400ms or less (Until  $\pm 0.2\%$  of the final value is reached)
- Crest Factor : 3 (For Model 7552 only)
- Temperature Coefficient :  $\pm (1/10 \text{ of the measuring accuracy})/^\circ\text{C}$
- Permissible Current : Model 7551 ; 2A (2A fuse incorporated)  
Model 7552 ; 2 to 2000mA range ... 2A (2A fuse incorporated)  
20A range ..... 20 A (no fuse)

\* : Integral time of 16.7ms implies 16.666 ... ms.