

263 Calibrator/Source

AMPS V/R (Passive)		ACCURACY ±(% setting + offset) 18°–28°C		TEMPERATURE COEFFICIENT ±(% setting + offset)/°C		OUTPUT RESISTANCE	
RANGE	STEP SIZE	90 Days	1 Year	0°–18°C & 28°–50°C			
2 pA	50 aA	0.375 + 10 fA	0.425 + 10 fA	0.04 + 2 fA		100 GΩ	
20 pA	500 aA	0.325 + 10 fA	0.375 + 10 fA	0.04 + 2 fA		100 GΩ	
200 pA	5 fA	0.20 + 30 fA	0.25 + 30 fA	0.01 + 2 fA		10 GΩ	
2 nA	50 fA	0.0625 + 100 fA	0.065 + 100 fA	0.01 + 30 fA		1 GΩ	
20 nA	500 fA	0.0625 + 1 pA	0.065 + 1 pA	0.0035 + 100 fA		100 MΩ	
200 nA	5 pA	0.035 + 10 pA	0.035 + 10 pA	0.0025 + 1 pA		10 MΩ	
2 μA	50 pA	0.025 + 100 pA	0.025 + 100 pA	0.0025 + 10 pA		1 MΩ	
20 μA	500 pA	0.025 + 1 nA	0.025 + 1 nA	0.0025 + 100 pA		100 kΩ	
200 μA	5 nA	0.025 + 10 nA	0.025 + 10 nA	0.0025 + 1 nA		10 kΩ	
2 mA	50 nA	0.025 + 100 nA	0.025 + 100 nA	0.0025 + 10 nA		10 kΩ	
20 mA	500 nA	0.15 + 1 μA	0.15 + 1 μA	0.0025 + 100 nA		1 kΩ	

Assumes <100μV compliance (voltage burden).

COULOMBS V/R (Passive)		ACCURACY ±(%setting + offset) 18°–28°C		TEMPERATURE COEFFICIENT ±(% setting + offset)/°C		OUTPUT RESISTANCE	
RANGE	STEP SIZE	1 Year		0°–18°C & 28°–50°C			
20 pC	0.5 fC	1.0 + 50 fC		0.05 + 10 fC		100 GΩ	
200 pC	5 fC	0.5 + 75 fC		0.01 + 10 fC		10 GΩ	
2 nC	50 fC	0.1 + 300 fC		0.01 + 10 fC		1 GΩ	
20 nC	500 fC	0.1 + 3 pC		0.01 + 100 fC		100 MΩ	
200 nC	5 pC	0.5 + 30 pC		0.01 + 1 pC		10 MΩ	
2 μC	50 pC	0.5 + 300 pC		0.01 + 10 pC		1 MΩ	
20 μC	500 pC	0.5 + 3 nC		0.01 + 100 pC		100 kΩ	

Measurement interval is 2.5 seconds.

Assumes <100μV of compliance (voltage burden).

COULOMBS (Active)

Accuracy is the same as COULOMBS V/R, except change the offset to 300fC on the 20pC and 200pC ranges.

VOLTS		ACCURACY ¹ ±(%setting + offset) 18°–28°C		TEMPERATURE COEFFICIENT ±(% setting + offset)/°C	
RANGE	STEP SIZE	90 Days	1 Year	0°–18°C & 28°–50°C	
200 mV	5 μV	0.0125 + 15 μV	0.0175 + 15 μV	0.002 + 0.5 μV	
2 V	50 μV	0.0125 + 50 μV	0.0175 + 50 μV	0.002 + 2 μV	
20 V	500 μV	0.0125 + 500 μV	0.0175 + 500 μV	0.002 + 20 μV	

¹Load resistance >100kΩ.

RESPONSE TIME: <0.5 second to rated accuracy.

OUTPUT RESISTANCE: <1Ω.

SHORT CIRCUIT CURRENT LIMIT: <75mA.

NOISE: <25ppm of range peak to peak in a 0.1Hz to 10Hz bandwidth.

IEEE-488 BUS IMPLEMENTATION

MULTILINE COMMANDS: DCL, LLO, SDG, UNL, UNT, GTL.
UNILINE COMMANDS: REN, ATN, EOI, IFC, SRQ.
INTERFACE FUNCTIONS: SH1, AH1, T6, TE0, L4, LE0, SR1, RL0, PP0, DC1, DT0, C0, E1.
PROGRAMMABLE PARAMETERS: Function, Range, Value, Zero, Operate, Guard, Digital Calibration, Temperature Compensation, Terminator, Status, Data Format, SRQ.

AMPS (Active)

Accuracy is the same as Amps V/R, except change the % setting on the 20mA range to 0.035% and change the offsets per the following table:

RANGE	ACCURACY ± offset	TEMPERATURE COEFFICIENT ± offset/°C
2 pA	100 fA	30 fA
20 pA	100 fA	30 fA
200 pA	120 fA	30 fA
2 nA	200 fA	No change

OUTPUT RESISTANCE: >10¹⁴Ω.

OUTPUT CAPACITANCE: <50pF.

OUTPUT LOAD: Output load must be non-inductive.

COMPLIANCE VOLTAGE: >12V. Front panel OPERATE light flashes when compliance is reached.

MAXIMUM OPEN CIRCUIT VOLTAGE: <45V for the 2mA and 20mA ranges; <25V for the 2pA–200μA ranges.

RESPONSE TIME: <0.5 second to rated accuracy for the 2nA–20mA ranges; <5 seconds for the 2pA–200pA ranges.

PREAMP OUTPUT: Maximum Load Current: 5mA.
Maximum Load Capacitance: 10nF.

OHMS		ACCURACY ±(% setting) 18°–28°C		TEMPERATURE COEFFICIENT ±(% setting/°C)	
NOMINAL VALUE	90 Days	1 Year	0°–18°C & 28°–50°C		
1 kΩ	0.04 ¹	0.04 ¹		0.0005	
10 kΩ	0.02 ¹	0.02 ¹		0.0005	
100 kΩ	0.02	0.02		0.0005	
1 MΩ	0.025	0.025		0.0005	
10 MΩ	0.035	0.0375		0.0015	
100 MΩ	0.065	0.07		0.0015	
1 GΩ	0.08	0.10		0.008 ²	
10 GΩ	0.20	0.225		0.008 ²	
100 GΩ	0.375	0.40		0.04 ²	

¹ After subtracting ZERO offset.

² Displayed value corrected for resistor temperature coefficient.

ZERO OFFSET: <1Ω.

TOLERANCE OF NOMINAL VALUE: 1kΩ–1MΩ, 0.1%; 10MΩ, 0.2%; 100MΩ–100GΩ, 3%.

MAXIMUM VOLTAGE ACROSS RESISTANCE FOR RATED ACCURACY: 1kΩ–10GΩ, 20V; 100GΩ, 100V.

GENERAL

DISPLAY: 5½-digit numeric LEDs with appropriate decimal point and polarity indication; signed two-digit alphanumeric exponent.

OUTPUT CONNECTIONS: Two-lug triaxial connector for output; five-way binding posts for PREAMP OUT, COMMON, and EXT INPUT. All connections on rear panel.

PROGRAMS: Menu provides front panel access to IEEE-488 address, Alpha or Numeric Exponent, Digital Calibration, and Temperature Compensation selection.

MAX. COMMON MODE VOLTAGE (DC to 60Hz sinewave): 350V peak.

ISOLATION (Common to Chassis): >10¹⁰Ω paralleled by <500pF.

EXT INPUT: Max. Input: 200V peak, 100mA peak.

Series Resistance: <1Ω.

WARM-UP: 1 hour to rated accuracy.

ENVIRONMENT: Operating: 0°–50°C; <70% RH non-condensing, up to 35°C. **Storage:** –25° to +65°C.

POWER: 105–125V or 210–250V (rear panel switch selected), 90–110V available, 50–60Hz, 25VA maximum.

DIMENSIONS, WEIGHT: 127mm high × 216mm wide × 359mm deep (5 in × 8½ in × 14½ in). Net weight 3.6kg (8.1 lbs).

ACCESSORY SUPPLIED: Model 7024-3 Triax Cable.

Specifications are subject to change without notice.