

Keithley Model 619

SPECIFICATIONS

DC VOLTS

RANGE	MAXIMUM READING	ACCURACY 1 YR., 23° ± 5°C ± (%rdg + counts)	TEMPERATURE COEFFICIENT 0-18°C & 28-50°C ± (%rdg + counts)/°C
200mV	199.999×10^{-3}	0.01 + 25	0.002 + 30
2 V	1.99999	0.01 + 10	0.002 + 3
20 V	19.9999	0.02 + 10	0.002 + 0.3
200 V	199.999	0.02 + 10	0.002 + 0.3

INPUT CAPACITANCE: Less than or equal to 20pF.

INPUT RESISTANCE: Greater than or equal to 20TΩ.

NMRR: Greater than 55dB (greater than 80dB with FILTER).

CMRR: Greater than 100dB (greater than 125dB with FILTER).

ANALOG SETTling TIME (to 0.1% of final value, unfiltered): Less than 5ms.

DC AMPS

RANGE	MAXIMUM READING	ACCURACY 1 YR., 23° ± 5°C ± (%rdg + counts)	TEMPERATURE COEFFICIENT 0-18°C & 28-50°C ± (%rdg + counts)/°C	INVERTING FULL SCALE ANALOG OUTPUT
2 nA	1.99999×10^{-9}	0.35 + 65	0.02 + 30	0.2V
20 nA	19.9999×10^{-9}	0.35 + 35	0.02 + 3	2.0V
200 nA	199.999×10^{-9}	0.15 + 25	0.01 + 30	0.2V
2 μA	1.99999×10^{-6}	0.15 + 10	0.01 + 3	2.0V
20 μA	19.9999×10^{-6}	0.15 + 25	0.01 + 30	0.2V
200 μA	199.999×10^{-6}	0.15 + 10	0.01 + 3	2.0V
2mA	1.99999×10^{-3}	0.15 + 25	0.01 + 30	0.2V
20mA	19.9999×10^{-3}	0.15 + 10	0.01 + 3	2.0V
2 A	1.99999	0.15 + 25	0.01 + 20	None

INPUT VOLTAGE DROP: Less than 1mV at full-scale except less than 0.6V on 2A range.

ANALOG SETTling TIME (to 0.1% of final value, unfiltered): 2nA through 2μA: 50ms; 20μA through 2A: 5ms.

NMRR: 2nA through 2μA: 70dB; 20μA through 2A: 55dB.

OHMS

RANGE	MAXIMUM READING	ACCURACY 1 YR., 23° ± 5°C ± (%rdg + counts)	TEMPERATURE COEFFICIENT 0-18°C & 28-50°C ± (%rdg + counts)/°C	MAXIMUM OPEN-CIRCUIT VOLTAGE
2 kΩ	1.99999×10^{-3}	0.2 + 25	0.01 + 30	5V
20 kΩ	19.9999×10^{-3}	0.2 + 10	0.01 + 3	5V
200 kΩ	199.999×10^{-3}	0.15 + 25	0.01 + 30	5V
2MΩ	1.99999×10^{-6}	0.15 + 10	0.01 + 3	5V
20MΩ	19.9999×10^{-6}	0.35 + 25	0.02 + 30	5V
200MΩ	199.999×10^{-6}	0.35 + 10	0.02 + 3	5V
2 GΩ	1.99999×10^{-9}	0.35 + 10	0.02 + 0.3	300V
20 GΩ	19.9999×10^{-9}	1 + 10	0.15 + 3	300V
200 GΩ	199.999×10^{-9}	4 + 10	0.5 + 0.3	300V
2 TΩ	1.99999×10^{-12}	10 + 10	0.5 + 0.3	300V

OHMS CURRENT SOURCES: 2kΩ, 20kΩ: 100μA.
200kΩ, 2MΩ: 1μA.
20MΩ, 2GΩ: 10nA.
20GΩ through 2TΩ: 100pA.

ANALOG OUTPUT: Analog output voltage level is the product of the Ohms current source and the resistance being measured.

ANALOG SETTling TIMES:

To 0.1% of final value, unfiltered, with less than 100pF input capacitance:

To 10% of final value, unfiltered, using 6191 Guarded Input Adapter with less than 1pF unguarded input capacitance:

2kΩ through 2MΩ: 5ms.
20MΩ: 20ms.
200MΩ: 200ms.
2GΩ: 150ms.
20GΩ: 1.5s.
200GΩ: 15s.
2TΩ: 150s.

IEEE-488 BUS IMPLEMENTATION

(Requires installation of Model 6193):

Multiline Commands: DCL, LLO, SDC, GET.

Uniline Commands: IFC, REN, EOI, SRQ, ATN. Compatible with IEEE-488-1978 standard.

PROGRAMMABLE PARAMETERS:

Front Panel Controls: Function, Range, Filter, Zero Check, Zero Correct, Baseline Store, Baseline Suppress.

Internal Parameters: SRQ Response, Trigger Modes, Binary or ASCII Data Formats, number of readings to be stored, data terminators, reading rates, integration period.

ADDRESS MODES: TALK ONLY and ADDRESSABLE.

GENERAL

DISPLAY: Numeric; 0.56 in. LED digits, 4½-digit mantissa @ 6.2 rdg/s (5½ digits @ 2.4 rdg/s in high resolution mode), 2 digit exponent, decimal point, signed exponent and mantissa.

OVERRANGE INDICATION: Display reads OFLO.

MAXIMUM ALLOWABLE INPUT: 250V rms dc to 60Hz sinewave.

INPUT CURRENT (18°-28°C): Less than 0.4pA.

EXTERNAL TRIGGER: TTL compatible EXTERNAL TRIGGER and ELECTROMETER COMPLETE.

INPUT CONNECTORS (6194 Electrometer rear panel): 2A range: 5-way binding posts. All other functions and ranges via Teflon® insulated triaxial connector.

OUTPUT CONNECTORS: Analog: Amphenol Series 80 (Microphone), 6194 Electrometer rear panel. IEEE: Amphenol or Cinch Series 57, 6193 IEEE Interface rear panel, BNC (chassis isolated) connections for EXTERNAL TRIGGER and ELECTROMETER COMPLETE.

READING RATES

Programmed Reading Rate	Number Of Integrations Averaged	Time Per Integration (ms)	Trigger To First Byte† (ms)	Readings Per Second
S0	1	4.1	32 (18 binary)	40
S1	1	16.67*	35	21
S2	2	16.67*	80	10
S3	4	16.67*	168	5.4
S4	1	100	120	4.7
S5	2	100	328	2.4
S6	4	100	742	1.2
S7	8	100	1680	0.6
S8	16	100	3360	0.3
S9	32	100	6720	0.15

*20 @ 50Hz.

†Typical. Add an additional 42ms for first conversion on a new channel, 26ms for first conversion on a new range or function.

MAXIMUM ALLOWABLE COMMON MODE VOLTAGES:

Input LO (Channel A) to line ground: 250V rms, dc to 60Hz sinewave.

Input LO (Channel B) to line ground: 250V rms, dc to 60Hz sinewave.

Input LO (Channel A) to Input LO (Channel B): 250V rms, dc to 60Hz sinewave.

WARMUP: 1 hour to rated accuracy.

POWER: 90-110, 105-125, 180-220, or 210-250V, 50 or 60Hz (internal switch selected). 75W max., 100VA max. (internally fan cooled).

ENVIRONMENTAL LIMITS: Operating: 0°-50°C, up to 35°C at 70% non-condensing R.H. Storage: -20°C to 70°C.

DIMENSIONS, WEIGHT: 432mm wide × 127mm high × 406mm deep (17 in. × 5 in. × 16 in.), stackable enclosure. Net weight, 9.8kg (22 lbs.) with Channel B Electrometer module and IEEE-488 Interface module.

ACCESSORIES SUPPLIED: One Model 6194 Electrometer Module and one Model 6011 Input Cable.

ACCESSORIES AVAILABLE: See Selector Guide on page 61.