MODEL 1201
LOW NOISE
VOLTAGE PREAMPLIFIER

DL Instruments

Phone: (607)539-1108

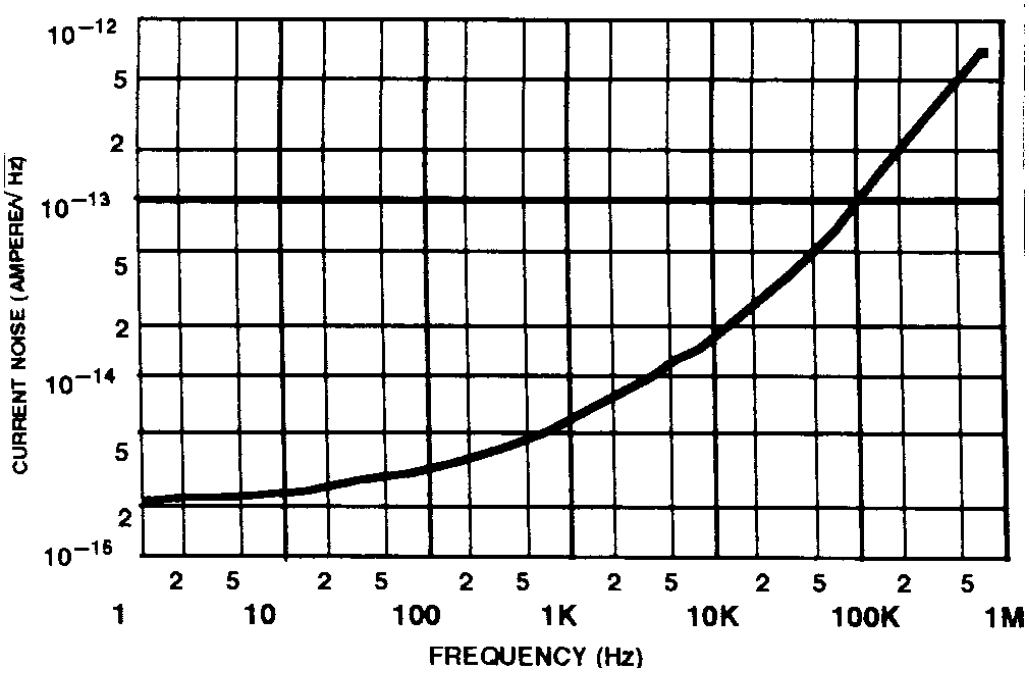
Email: info@dlinstruments.com

www.dlinstruments.com

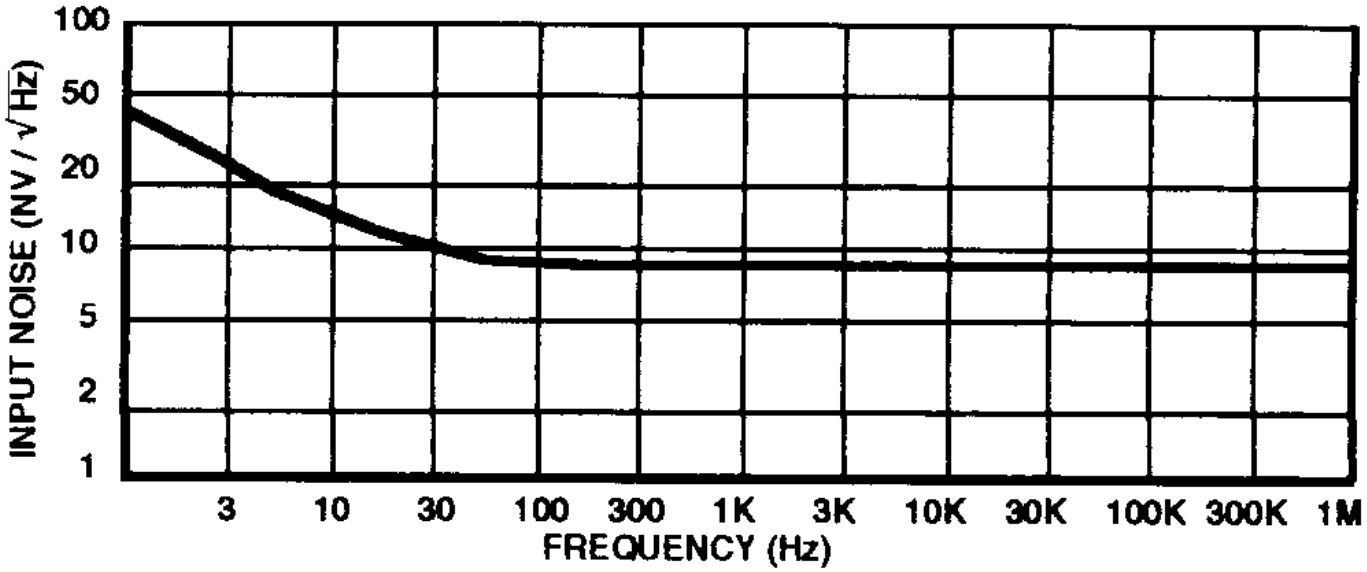
The Model 1201 Voltage Preamplifier was designed to provide all of the features required of a modern laboratory preamplifier. It features high impedance differential or single-ended input and superior common mode rejection performance with operation either in ac or dc coupled modes. It is an excellent choice for a wide variety of applications areas from evoked potential measurements to infrared radiometry requiring low noise, high gain and high input impedance. Gain is selectable from 10 to 25,000 with accuracy of 1% and stability better than 0.03% ^{0}C. Its performance is unexcelled.

Features and capabilities include:
dc stability 6µ V/^{0}C; CMRR above 125dB;
CM input to 10Vpk-pk; input leakage current <10pA:
frequency response to 400 kHz;
distortion 0.01%: X1 output;
600Ω outputs;
Lo-Z output (to 25 mA);
Battery/line operation.

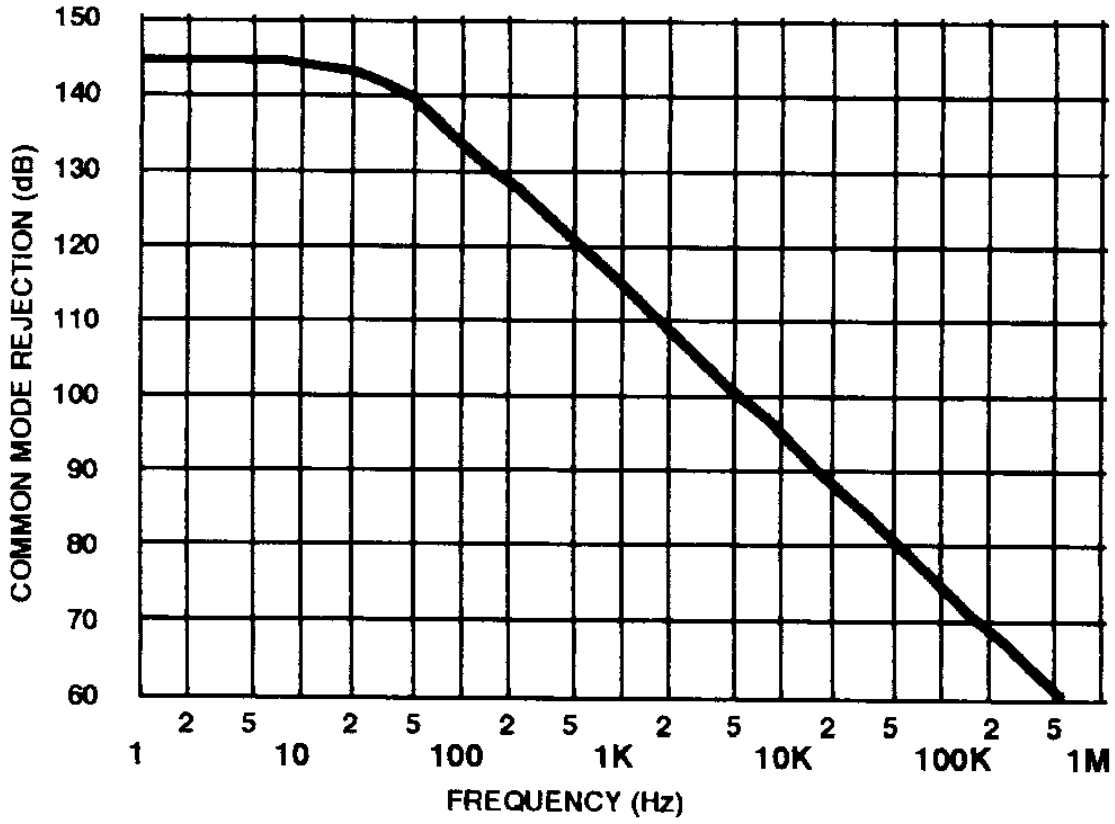
The unit may be battery operated with the addition of the Option 10 Battery Pack. This allows the unit to run on batteries only, line power only, or recharge while operating on line power. Fast charge and trickle charge rates are switch selectable. External battery modification option M104 is also available so users may use their own external battery to power the unit.



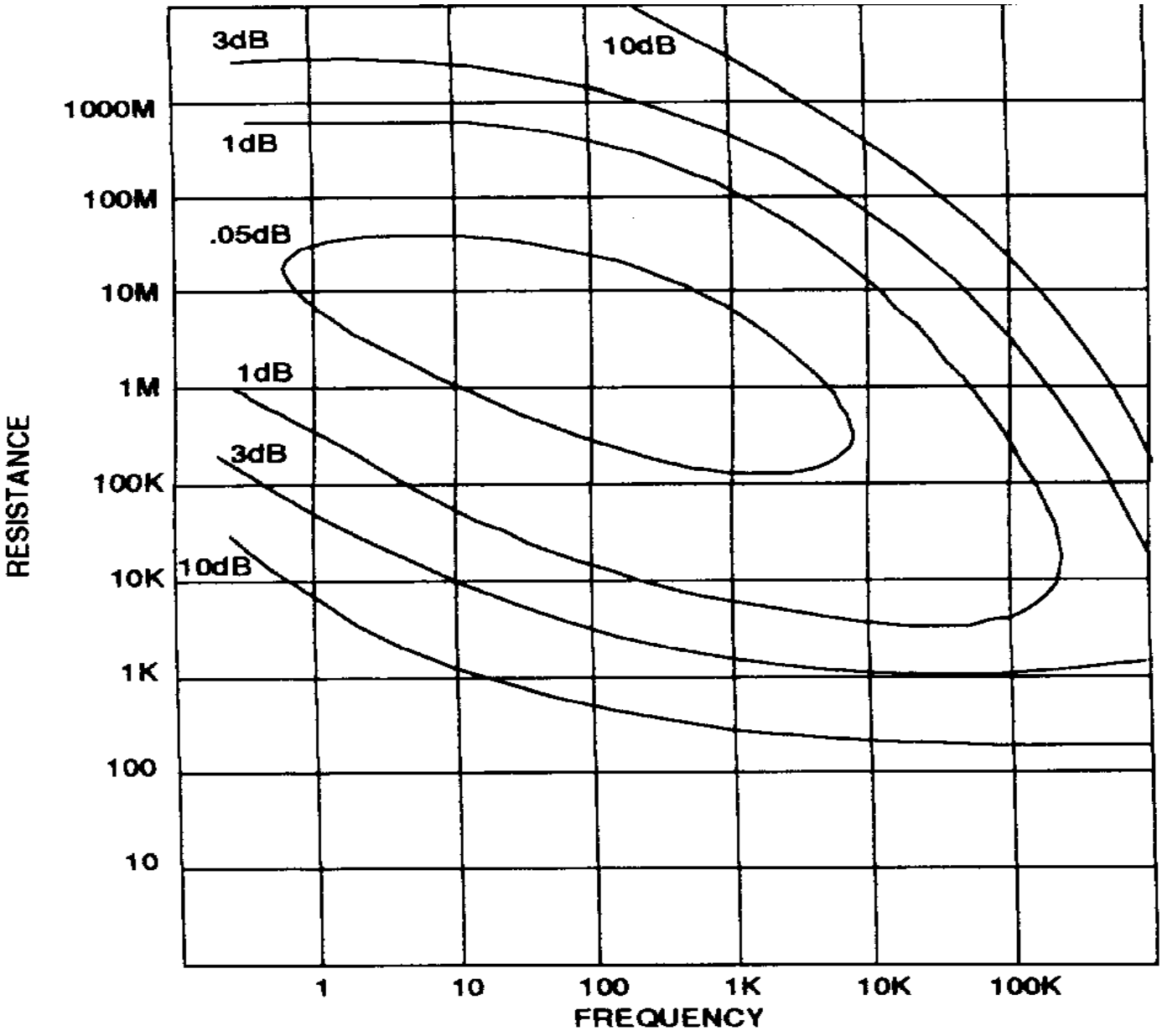
Model 1201 Noise Current Density Plot



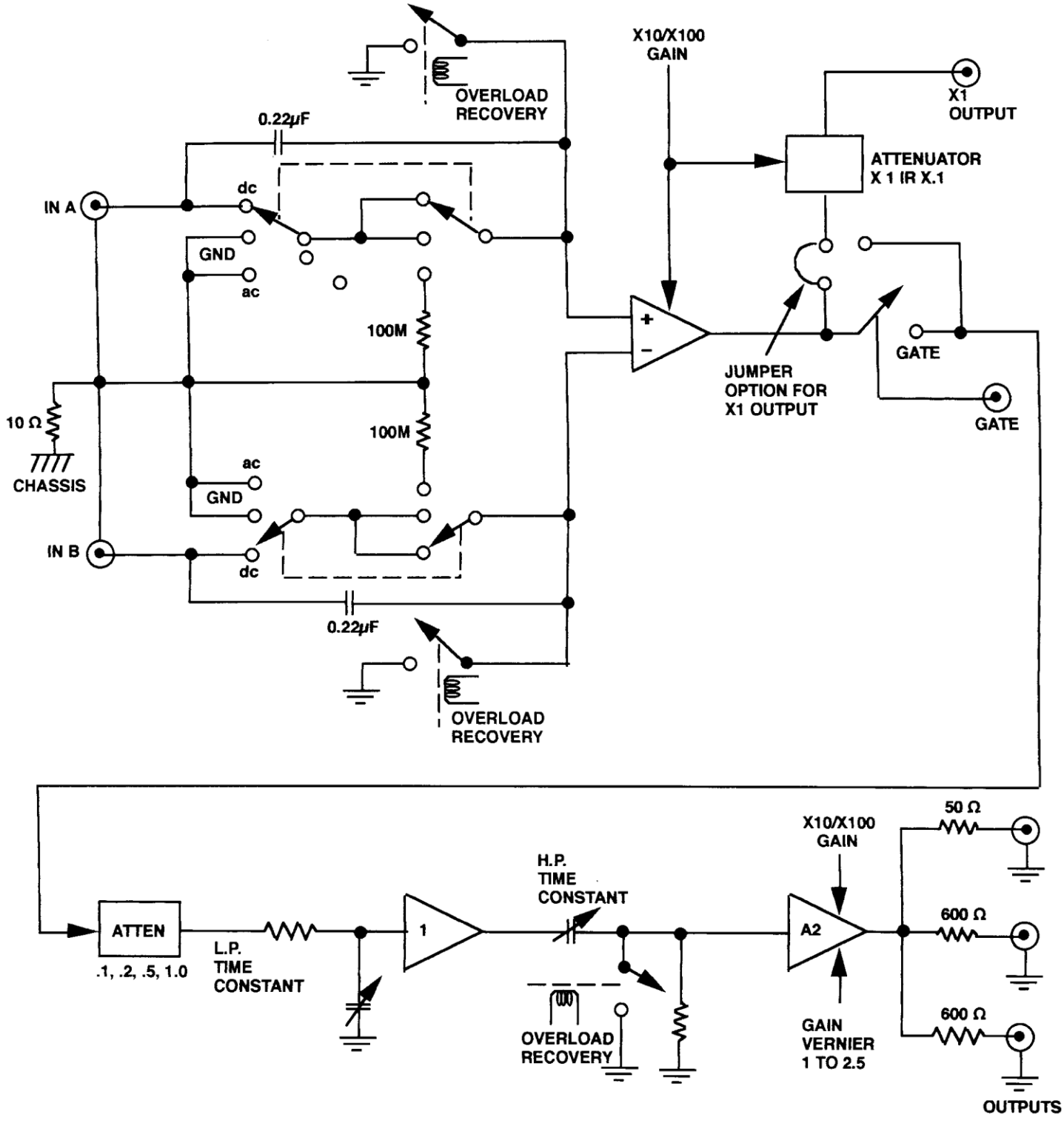
Model 1201 Noise Voltage Density Plot



Model 1201 Typical Common Mode Rejection



Model 1201 Noise Contours



Model 1201 Block Diagram

SPECIFICATIONS

INPUT IMPEDANCE

dc Coupled Greater than 1 GΩ (100MΩ); Typically 5 GΩ (5000MΩ).
ac Coupled 100MΩ (each input BNC)

INPUT CURRENT

Less than 10pA, either input; less than 5 pA difference (offset) current.

INPUT FREQUENCY RESPONSE

<0.008Hz (ac Coupled) to 400 kHz

dc STABILITY (vs TEMPERATURE)

6 μV/°C max, referred to input; 300 μV/°C max, referred to output.

dc STABILITY (vs Time)

20 μV/24 hr r.t.i., non-cumulative, maximum, after ½ hour warm-up.

MAXIMUM INPUT, COMMON MODE

10 V, pk-pk; 200Vdc in ac mode.

MAXIMUM INPUT, DIFFERENTIAL OR SINGLE-ENDED

± of 750 mV (gains X10-X100); ±75 mV (gains of X200-X 10K)

COMMON MODE REJECTION (Minimum)

Frequency	Gain > 200	Gain < 200
dc – 100 Hz	125 dB	115 dB
1 kHz	105 dB	95 dB
10 kHz	85 dB	75 dB
100 kHz	65 dB	55 dB
200 kHz	55 dB	45 dB
400 kHz	50 dB	40 dB

GAIN
X10 to X10,000 in a 1-2-5-10 sequence; front panel potentiometer provide continuous gain to X25,000

Gain Accuracy
Better than 1% when vernier is in cal position.

Gain stability
Better 0.03%/^{O}C.

Distortion
Typically less than 0.01%

Frequency Response
de Coupled dc to 400 kHz (-3 db) with low pass switch in MAX position.
ac coupled 0.008 Hz to 400 kHz (-3 db) with low pass switch at MAX position.

High pass filter (**low frequency roll off**)
Switch selectable for dc or 0.03 Hz to 3 kHz, in a 1-3-10 sequence @ 6dB/Octave roll off.

Low pass filter (high frequency roll off) Switch selectable for dc or 3 Hz to 300 kHz and MAX in a 1-3-10 sequence @6 dB/ octave roll off; bandwidth in MAX position is 400 kHz min. at full output.

Noise figure
Less than 0.4 dB at 1 kHz, with 1 MΩ source impedance. Less than 0.04 dB at 1kHz , with 1 MΩ source impedance.

Noise
Less than 15 nV per $Hz^{-1/2}$ at 10 Hz. Less than 7nV per $Hz^{-1/2}$ at 1 kHz. Less than 4 fA/√Hz below 100 Hz.

Outputs

Four outputs (BNC) as follows:

a) 600Ω outputs (2)
b) Lo-Z output (to 25mA, 50Ω)
c) Unity-gain (X1)output

Maximum output voltage (battery operation)

a) 600Ω outputs: 12Vpk-pk, min.
b) Lo-Z output: 10Vpk-pk min., up to 25 mA
c) Unity-gain (X1) output: 1.3V pk-pk, min., up to 7 mA

Maximum output voltage (line operation)

a) 600Ω outputs: 20V pk-pk, min.
b) Lo-Z output: 18V pk-pk min., up to 25 mA
c) Unity-gain (X1) output: 2V pk-pk, min., up to 7 mA

Battery charge time <15hr**.**

Battery operation time> 25hr.

Gated operation

Preamplifier may be gated with external input (rear panel BNC). Any waveform type, including TTL or contact closure, is permissible. Minimum duration (pulse) is 20µsec. Maximum gate rate is 20 kHz.

dc STABILITY (vs Time)

20 µV/24 hr r.t.i., non-cumulative, maximum, after ½ hour warm-up.

POWER 100VAC 120VAC or 220 VAC to 240 VAC (switch selectable),

50-60 Hz, 10 watts.

DIMENSIONS 90×242×385 (3.5 inch high × 9.5 inch wide ×15 inch deep)

WEIGHT: 3.7kg (8 lb 2oz) less Battery pack

OPPORATING TEMPREATURE 5 ^{o}C to 50 ^{o} C.

1201 OPTION 10 BATTERY PACK

The retrofittable Nickel Cadmium Battery Pack installs inside the chassis, and is charged from 1201 power supply.

Battery charge time (fast charge) < 15 hours
Battery operation time >25 hours
Weight 1.2kg (2 lb. 10 oz)

Option M104 is for external battery modification. In this operation the unit can switch to either powered normally or by external battery**.**

For more information please contact:

DL INSTRUMENTS LLC
646 76 Road
Brooktondale, NY 14817
USA

Phone: (607)539-1108
Email: info@dlinstruments.com

DL Instruments
www.dlinstruments.com