DMC

MODEL 3310
HIGH ACCURACY
INSTRUMENTATION AMPLIFIER

Dynamic Measurements Corp.
8 Lowell Avenue. Winchester. Mass 01890 (617) 729-7870 TWX (710) 348-6596

ELECTRICAL SPECIFICATIONS

At +25°C with ±15VDC power supply unless otherwise noted

	MIN	TYP	MAX	UNITS
GAIN				
Range of Gain	1		1000	V/V
Gain Equation		$G=1+(40k/R_G)$		V/V
Error From Equation DO (1)		±(0.04 ±0.000016G -0.02/G	±(0.1±0.0003G -0.05/G)	% of F.S.
Gain Temp. Coefficient (2)				
G=1		2	5	ppm/°C
G=10		20	100	ppm/°C
G=100		22	110	ppm/°C
G=1000		22	110	ppm/°C
RATED OUTPUT				
Voltage	±10	±12.5		V
Current	±5	±12.5		mA
Output Impedance		0.01		Ω
INPUT OFFSET VOLTAGE				
Initial Offset at +25°C (3)		±25 ±200/G	±50 ±400/G	µV
vs Temperature			±2 ±20/G	µV/°C
vs Supply		±(1 + 20/G)		µV/V
vs Time		±(1 + 20/G)		µV/mo
INPUT BIAS CURRENT (each input)		±15	±30	nA
Vs. Temp		±.2		nA/°C
Vs. Supply		±.1		nA/V
INITIAL OFFSET CURRENT		±15	±30	nA
Vs. Temp		±.5		nA/°C
INPUT IMPEDANCE				
Differential		$10^{10} \parallel 3$		ohm ‖ pF
Common Mode		$10^{10} \parallel 3$		ohm ‖ pF
INPUT VOLTAGE RANGE				
Range, Linear Response	±10	±12		V
CMR with 1k Source Imbal.				
DC to 60Hz, G=1	80	90		dB
DC to 60Hz, G-10	96	106		dB
DC to 60Hz, G=100 to 1000	106	110		dB

2

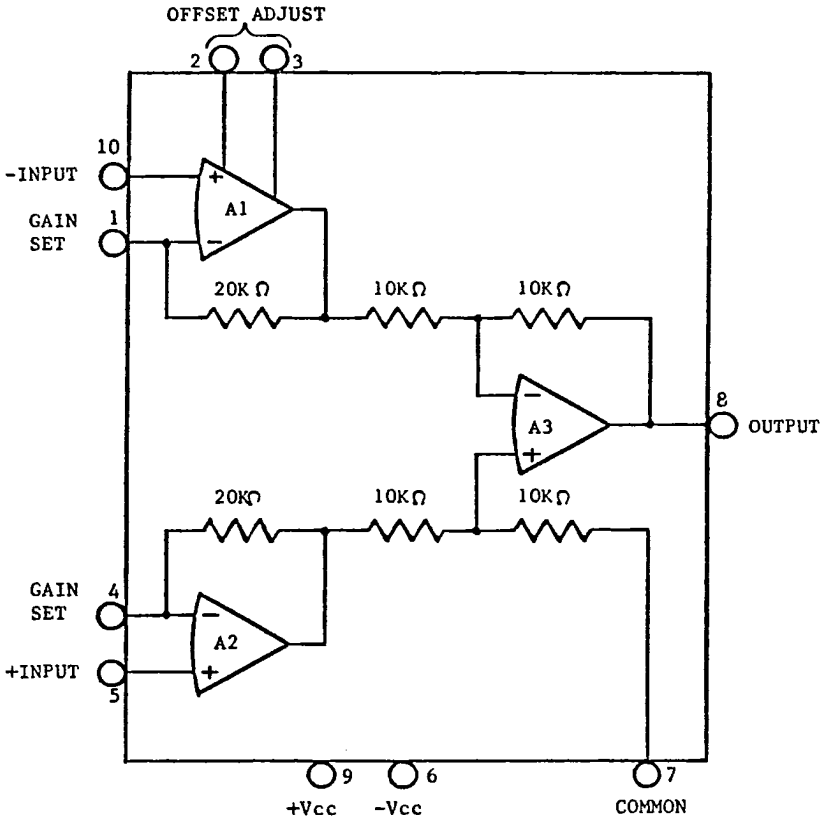
	MIN	TYP	MAX	UNITS
INPUT NOISE				
Input Voltage Noise				
f_B=0.01Hz to 10Hz		0.8		μV, p-p
Density, G=1000				nV/√Hz
fo=10Hz		18		nV/√Hz
fo=100Hz		15		nV/√Hz
fo=1kHz		13		nV/√Hz
Input Current Noise				
f_B=0.01Hz to 10Hz		50		pA,p-p
Density				
fo=10Hz		0.8		pA/√Hz
fo=100Hz		0.46		pA/√Hz
fo=1kHz		0.35		pA/√Hz
DYNAMIC RESPONSE				
Small Signal, ±3dB Flatness				
G=1		300		kHz
G=10		140		kHz
G=100		25		kHz
G=1000		2.5		kHz
Small Signal, ±1% Flatness				
G=1		20		kHz
G=10		10		kHz
G=100		1		kHz
G=1000		200		Hz
Full Power, G=1 - 100		6.4		kHz
Slew Rate, G=1 - 100	0.2	0.4		V/μsec
Settling Time (0.1%)				
G=1		30	40	μsec
G=100		40	55	μsec
G=1000		35	470	μsec
Settling Time (0.01%)				
G=1		30	45	μsec
G=100		50	70	μsec
G=1000		500	650	μsec
POWER SUPPLY				
Rated Voltage		±15		V
Voltage Range	±5		±20	V
Current, Quiescent		±6.7	±8.5	mA
TEMPERATURE RANGE				
Specification	-25		+85	°C
Operation	-55		+125	°C
Storage	-65		+150	°C

-2

	MIN	TYP	MAX	UNITS
ABSOLUTE MAXIMUM RATINGS				
Supply			±20V	V
Power Dissipation		600		mW
Input Voltage			±Vcc	V
Output Short Circuit Duraction		Continuous to ground		

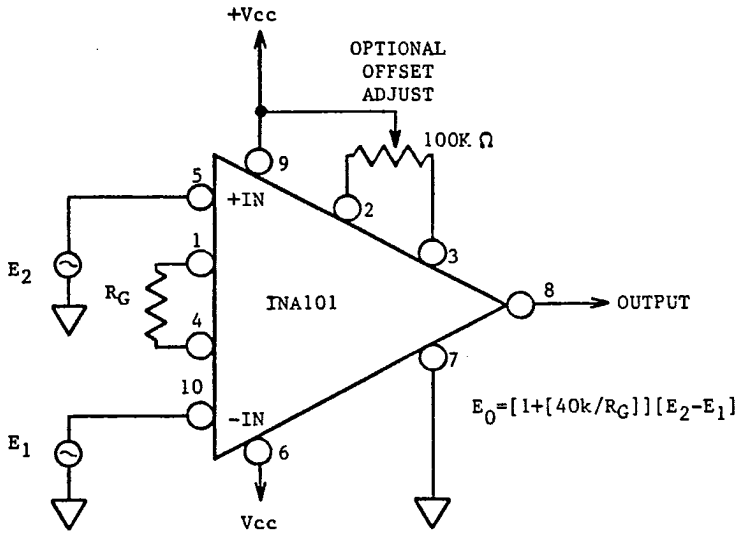
NOTES: 1. Typically the tolerance of RG will be the major source of gain error.
2. Not including the TCR of RG.
3. Adjustable to zero at any one gain.

BLOCK DIAGRAM



4

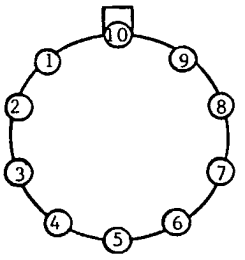
CONNECTION DIAGRAM



Basic Circuit Connection Including Optional Input Offset Null Potentiometer.

PIN ASSIGNMENTS

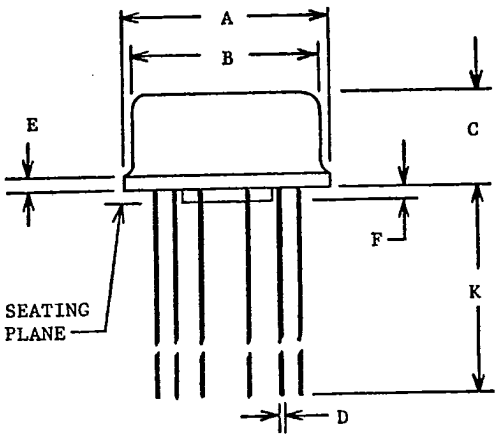
PIN	FUNCTION
1	GAIN SET
2	OFFSET ADJUST
3	OFFSET ADJUST
4	GAIN SET
5	+IN
6	-Vcc
7	COMMON
8	OUTPUT
9	+Vcc
10	-IN

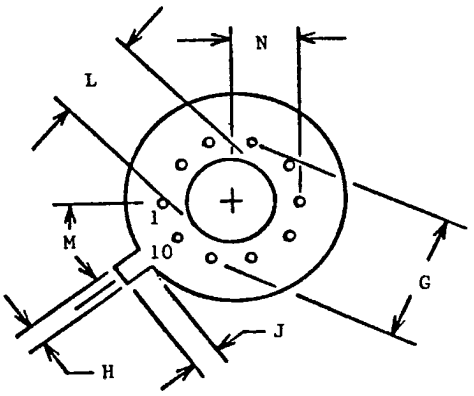


TOP VIEW

5

TO-100





BOTTOM VIEW

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.335	.370	8.51	9.40
B	.305	.335	7.75	8.51
C	.165	.185	4.19	4.70
D	.016	.021	0.41	0.53
E	.010	.040	0.25	1.02
F	.010	.040	0.25	1.02
G	.230		5.84	
H	.028	.034	0.71	0.86
J	.029	.045	0.74	1.14
K	.500	- -	12.70	- -
L	.120	.160	3.05	4.06
M	36°		36°	
N	.110	.120	2.79	3.05

NOTE: Leads in true position within 0.010" (0.25mm) R at MMC at seating plane.

6