

DMC

MODEL 3310
HIGH ACCURACY
INSTRUMENTATION AMPLIFIER

Dynamic Measurements Corp.

8 Lowell Avenue, Winchester, Mass 01890 (617) 729-7870 TWX (710) 348-6596

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

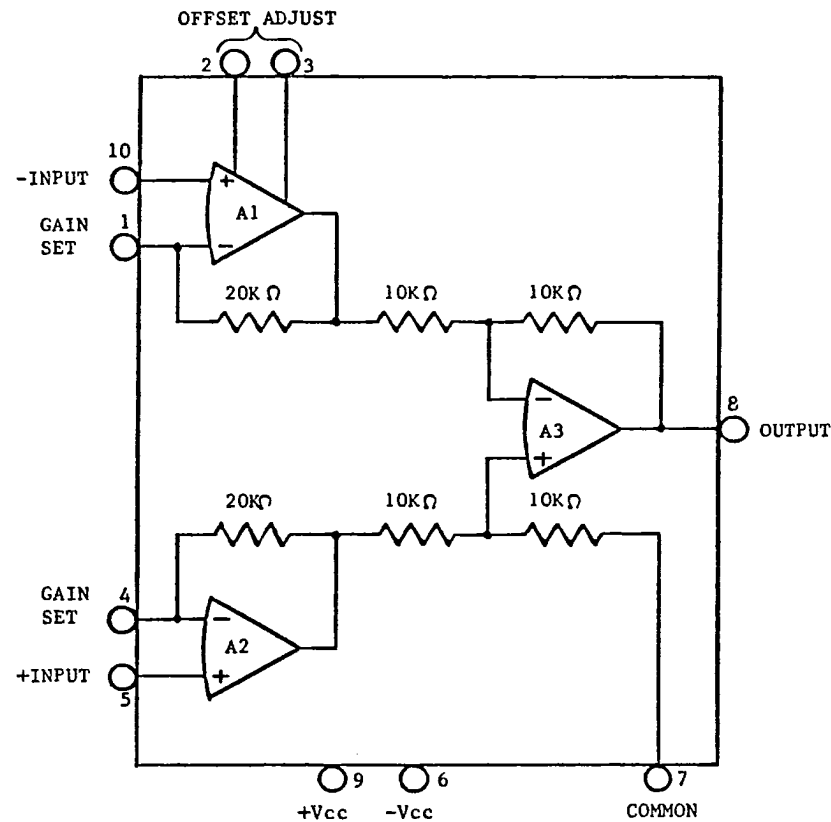
	MIN	TYP	MAX	UNITS
GAIN				
Range of Gain	1		1000	V/V
Gain Equation	$G=1+(40k/R_G)$			V/V
Error From Equation DO (1)	$\pm(0.04 \pm 0.000016G - 0.02/G)$			% of F.S.
Gain Temp. Coefficient (2)				
G=1		2	5	ppm/°C
G=10		20	100	ppm/°C
G=100		22	110	ppm/°C
G=1000		22	110	ppm/°C
RATED OUTPUT				
Voltage	±10	±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 $\parallel$ pF
Common Mode		$10^{10} \parallel 3$		ohm $\parallel$ 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

	MIN	TYP	MAX	UNITS
INPUT NOISE				
Input Voltage Noise				$\mu V, p-p$
$f_B=0.01Hz$ to $10Hz$		0.8		$nV/\sqrt{Hz}$
Density, $G=1000$				$nV/\sqrt{Hz}$
$f_o=10Hz$		18		$nV/\sqrt{Hz}$
$f_o=100Hz$		15		$nV/\sqrt{Hz}$
$f_o=1kHz$		13		$nV/\sqrt{Hz}$
Input Current Noise				$pA, p-p$
$f_B=0.01Hz$ to $10Hz$		50		
Density				$pA/\sqrt{Hz}$
$f_o=10Hz$		0.8		$pA/\sqrt{Hz}$
$f_o=100Hz$		0.46		$pA/\sqrt{Hz}$
$f_o=1kHz$		0.35		$pA/\sqrt{Hz}$
DYNAMIC RESPONSE				
Small Signal, $\pm 3dB$ Flatness				
$G=1$		300		kHz
$G=10$		140		kHz
$G=100$		25		kHz
$G=1000$		2.5		kHz
Small Signal, $\pm 1\%$ 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		$V/\mu sec$
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	$^{\circ}C$
Operation	-55		+125	$^{\circ}C$
Storage	-65		+150	$^{\circ}C$

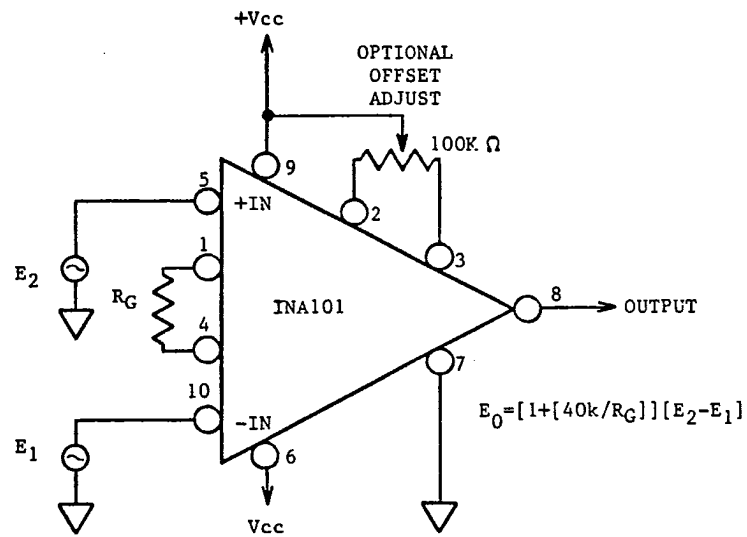
	MIN	TYP	MAX	UNITS
ABSOLUTE MAXIMUM RATINGS				
Supply			$\pm 20V$	V
Power Dissipation		600		mW
Input Voltage			$\pm V_{CC}$	V
Output Short Circuit Duration		Continuous to ground		

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

BLOCK DIAGRAM



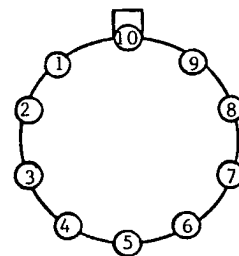
CONNECTION DIAGRAM



Basic Circuit Connection Including
Optional Input Offset Null
Potentiometer.

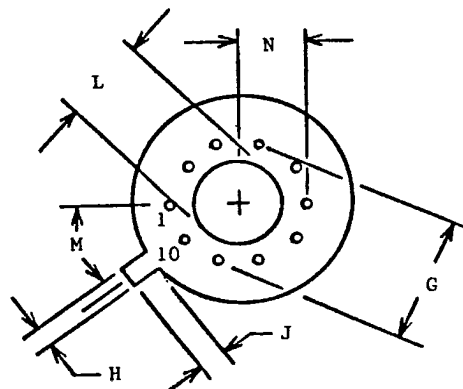
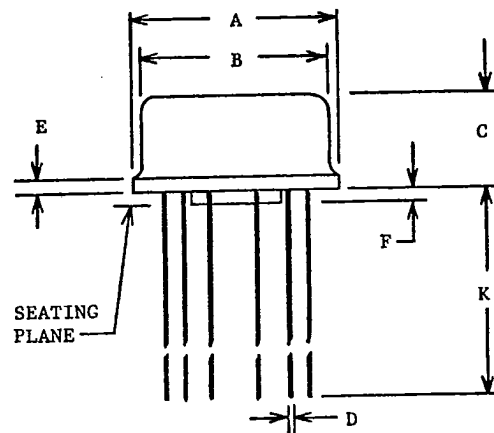
PIN ASSIGNMENTS

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

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.