

**DMC**

MODEL 3120

16 BIT A/D CONVERTER

**Dynamic Measurements Corp.**

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At +25°C and Rated Power Supplies Unless Otherwise Noted

( ) = REFER TO NOTE	MIN	TYP	MAX	UNITS
RESOLUTION			16	Bits
ANALOG INPUTS				
Voltage Ranges				
Bipolar		±2.5, ±5, ±10		V
Unipolar		0 to +5, 0 to +10, 0 to +20		V
Impedance (Direct Input)				
0 to +5V, ±2.5V		2.5		K Ω
0 to +10V, ±5.0V		5		K Ω
0 to +20V, ±10V		10		K Ω
DIGITAL INPUTS (1)				
Convert Command	Positive pulse 50nsec wide (min) trailing edge "1" to "0" initiates conversion			
Logic Loading			1	TTL Load
Eternal Clock	Negative pulse 100-200 nsec wide Frequency < internal clock			
TRANSFER CHARACTERISTICS				
ACCURACY				
Gain Error (2)		+0.1	±0.2	%
Offset Error				
Unipolar (2)		±0.05	±0.1	% of FSR (3)
Bipolar (2)		±0.1	±0.2	% of FSR
Linearity Error			±0.003	% of FSR
Inherent Quantization Error		±1/2		LSB
Differential Linearity Error		±0.003		% of FSR
Noise (3σ, p-p)		±0.003		% of FSR
POWER SUPPLY SENSITIVITY				
±15VDC		0.003		% of FSR/% Vs
+5VDC		0.001		% of FSR/% Vs
CONVERSION TIME, (14 Bits) (4)			15	μsec
WARM UP TIME	5			Min
DRIFT				
Gain			±15	ppm/°C
Offset				
Unipolar		±2	±4	ppm of FSR/°C
Bipolar			±10	ppm of FSR/°C
Linearity		±2	±3	ppm of FSR/°C

	MIN	TYP	MAX	UNITS
No Missing Codes Temp Range (14 bit) (13 bit)	+10		+40	°C °C
OUTPUT				
DIGITAL DATA (All codes complementary)				
Output Codes (5)				
Unipolar		CBS		
Bipolar		COB,CTC		
Output Drive			2	TTL Loads
Status		Logic "1" during conversion		
Status Output Drive			2	TTL Loads
Internal Clock				
Clock Output Drive			2	TTL Loads
Frequency (7)	933		1400	KHz
POWER SUPPLY REQUIREMENTS				
Power Consumption		1.55		W
Rated Voltage, Analog	±14.5	±15	±15.5	VDC
Rated Voltage, Digital	+4.75	+5	+5.25	VDC
Supply Drain +15VDC		+45		mA
Supply Drain -15VDC		-35		mA
Supply Drain +5VDC		+70		mA
TEMPERATURE RANGE				
Specification	0		+70	°C
Operating (derated specs)	-25		+85	°C
Storage	-55		+125	°C

Notes: 1. DTL/TTL compatible, i.e. Logic "1" = 2.0V, min for inputs. For digital outputs Logic "0" = 0.4V, max, Logic "1" = 2.4V min

2. Adjustable to Zero.

3. FSR means Full Scale Range. For example, unit connected for ±10V range has 20V FSR.

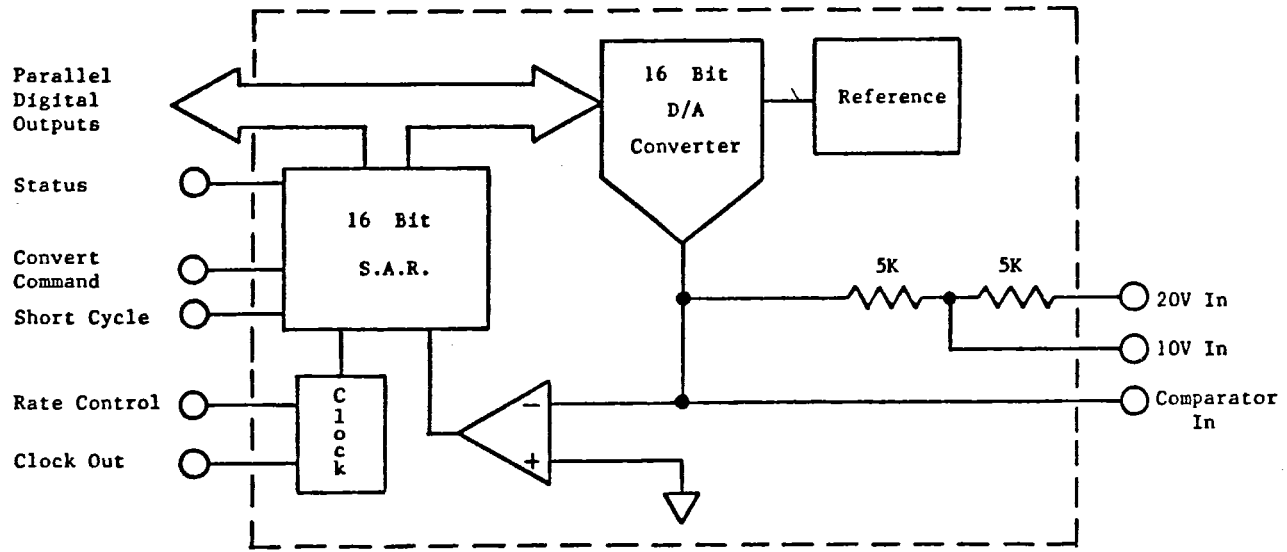
4. Conversion time may be shortened with "Short Cycle" set for lower resolution and with use of Clock Rate Control. The Clock Rate Control (pin 23) should be connected to Digital Common for specified conversion time. Short Cycle (pin 32) should be left open for 16-bit resolution or connected to the n+1 digital output for n-bit resolution. For example, connect Short Cycle to Bit 15 (pin 15) for 14-bit resolution. For resolutions less than 16 bits, pin 32 should also be tied to +5V through a 2K resistor.

5. See Table 1. CSB- Complementary Straight Binary, COB - Complementary Offset Binary, CTC - Complementary Two's Complement.

6. CTC coding obtained by inverting MSB (pin 1).

7. Adjustable with Clock Rate Control from approximately 933KHz to 1.4MHz.

BLOCK DIAGRAM



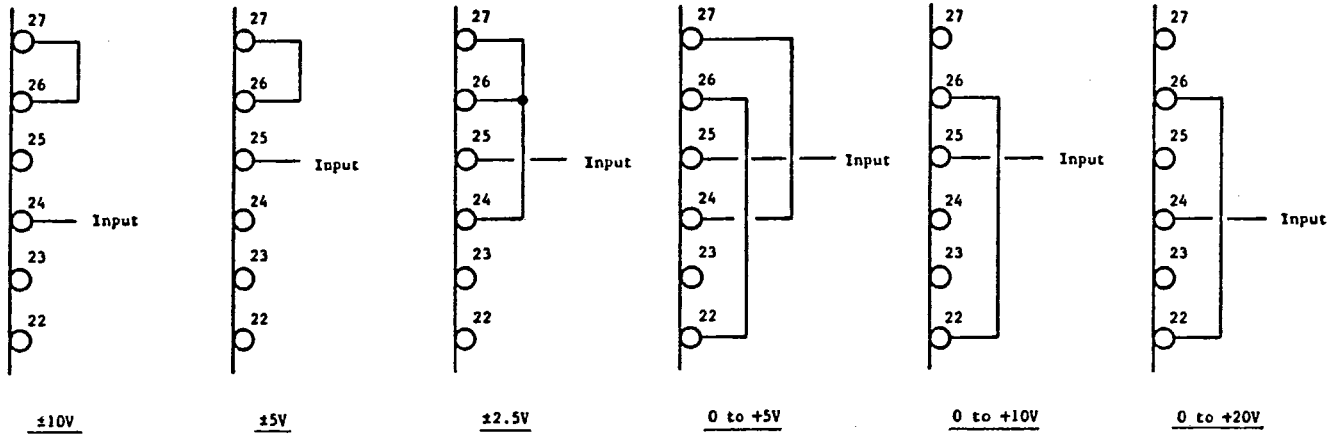
PIN CONNECTIONS

TOP VIEW

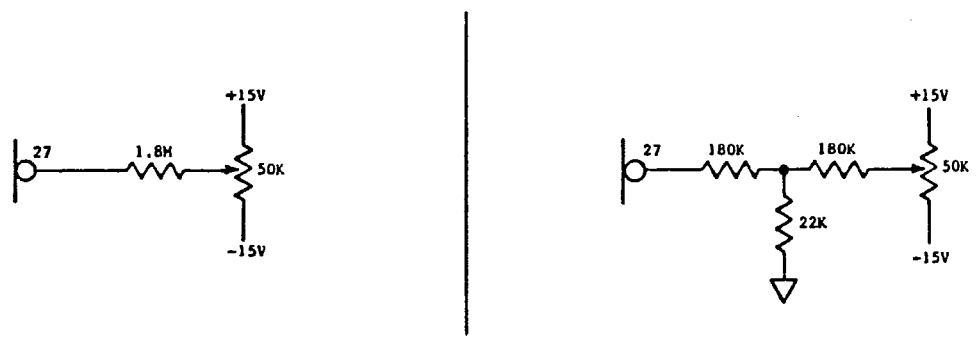
1	Bit 1	SHORT CYCLE	32
2	Bit 2	CONVERT COMMAND	31
3	Bit 3	+5VDC SUPPLY	30
4	Bit 4	GAIN ADJUST	29
5	Bit 5	+15VDC SUPPLY	28
6	Bit 6	COMPARATOR IN	27
7	Bit 7	BIPOLAR OFFSET	26
8	Bit 8	10V	25
9	Bit 9	20V	24
10	Bit 10	CLOCK RATE CONTROL	23
11	Bit 11	ANALOG COMMON	22
12	Bit 12	-15VDC SUPPLY	21
13	Bit 13	CLOCK OUT	20
14	Bit 14	DIGITAL COMMON	19
15	Bit 15	STATUS	18
16	Bit 16	N.C.	17

\*If an external clock is used, connect the clock to pin 31 (CONVERT COMMAND).

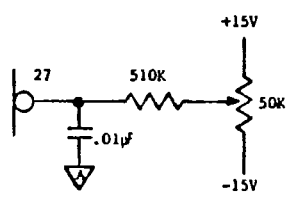
INPUT SCALING CONNECTIONS



EXTERNAL OFFSET AND GAIN ADJUSTMENTS



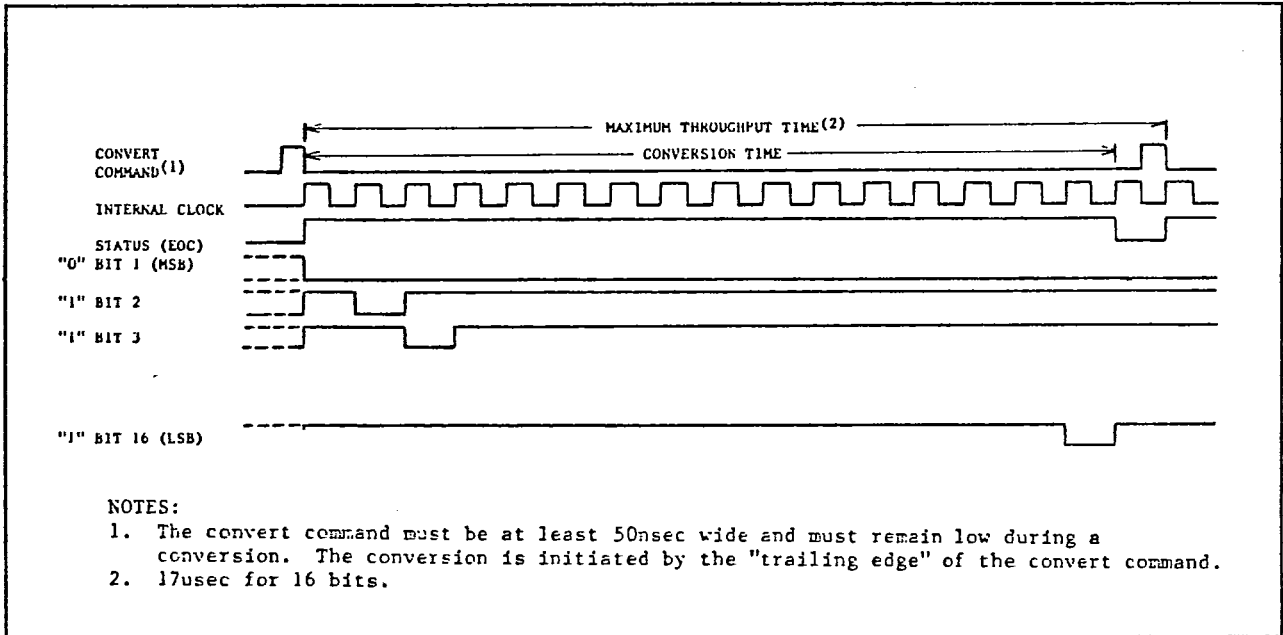
OFFSET ADJUST CIRCUITS

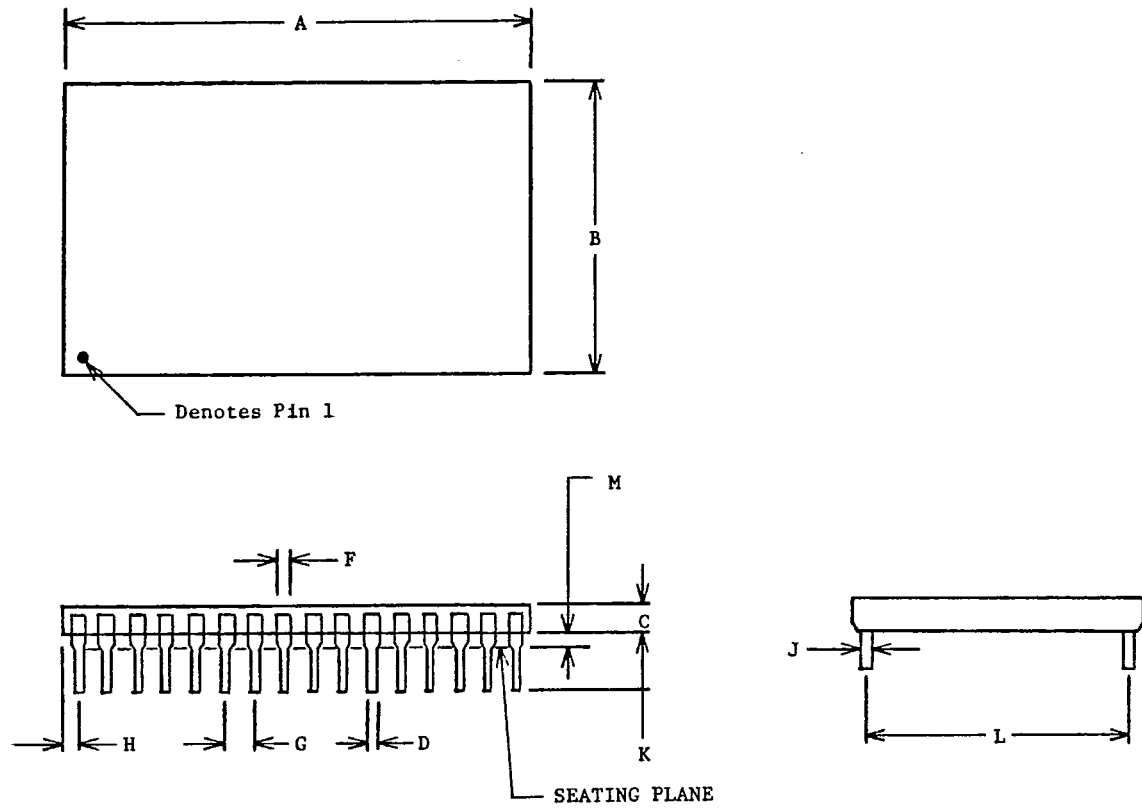


GAIN ADJUST

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TIMING DIAGRAM





DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.678	1.712	42.62	43.48
B	1.079	1.101	27.41	27.97
C	.180	.210	4.57	5.33
D	.016	.020	.41	.51
F	.045	.055	1.14	1.40
G	.100		2.54	
H	.089	.106	2.26	2.69
J	.009	.012	.23	.30
K	.200	.210	5.08	5.33
L	.900		22.86	
M	.015	.035	.38	.89

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

Pin numbers shown for reference only. Numbers may not be marked on package.

CASE: Ceramic

WEIGHT: 13 grams (0.46 oz.)

HERMETICITY: Conforms to method 1014 condition C step 1 fluorocarbon of MIL-STD-883 gross leak.

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