MODEL 3016

16 CHANNEL 16 BIT DAC

FEATURES

- Wide Dynamic Range (< 1 mV RMS Noise in 20 V Range)
- Low Drift (1mV per 10 minutes)
- 16 Channels
- All Channels Track to Within 2 mV of Each Other
- Only One Gain and One Offset Trim to Calibrate All Channels
- Powerup Reset to 0 V
- High density

DESCRIPTION

The DSPT Model 3016 digital-to-analog converter module has sixteen differential outputs with guaranteed 14 bits of dynamic range. Typically as much as 16 bits may be useful, particularly with controlled environmental circumstances.

Settling time is 2 msec for 20 V change. Receiver should have at least 1 KΩ of impedance. Absolute accuracy of 13 bits eliminates the need for individual channel trims.

Model 3016 is designed by using only one 16 bit DAC which is multiplexed to 16 precision sample-and-hold circuits. The voltage outputs of all channels are accurate to within 2.5 mV. Module calibration involves only two trim pots instead of 32.
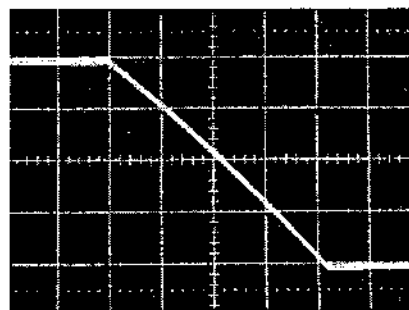
Applications range from power supply and magnet control to automated testing and low frequency high stability signal generation.
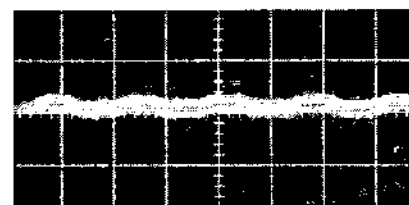

MEASURED MAX. ACCURACY DEVIATION FROM DESIRED OUTPUT VOLTAGE
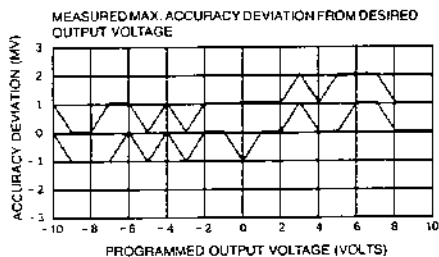
NOTE: Deviation of any channel from programmed output voltage is within the limits of the plot.

MEASURED ABSOLUTE MAX. VOLTAGE DIFF (MV) BETWEEN CHANNELS

CHANGE IN OUTPUT VOLTAGE (MV) VS TEMPERATURE
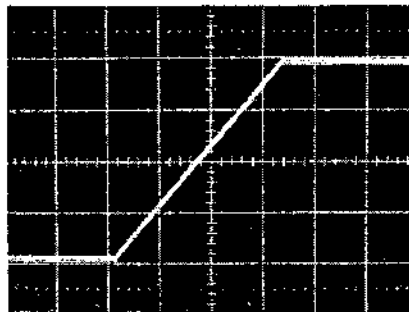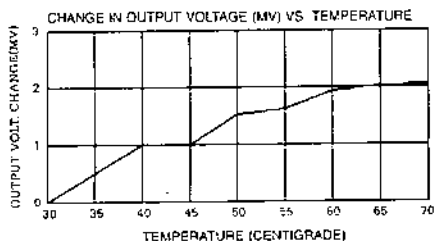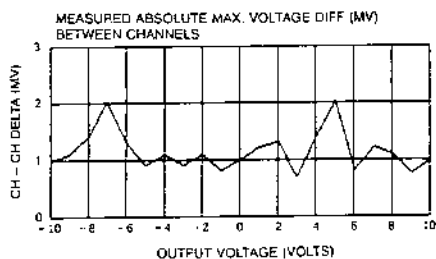
FULL SCALE OUTPUT CHANGE (5 VOLTS/DIV, .5 ms/DIV)

FULL SCALE OUTPUT CHANGE (5 VOLTS/DIV, .5 ms/DIV)

CHANNEL—CHANNEL CROSSTALK (EVEN CHANNELS = +10 V, ODD CHANNELS = -10 V 5m V/DIV, 10 ms/DIV)

OUTPUTS

ACTUAL SIZE

TECHNICAL SPECIFICATIONS - MODEL 3016

ANALOG OUTPUTS
Number of Channels: 16 differential pairs
Full Scale: – 10 V to + 10 V (FS)
Resolution: 16 Bits (.0015%)
Linearity Error: ± .003%
Monotonicity Temp. Range (to 14 Bits): 0-50° C
Temperature Coefficients

> Gain: ± 15 ppm of FSR / °C
> Offset: ± 10 ppm of FSR / °C
> Differential linearity: ± 2 ppm of FSR / °C
> Linearity: ± 2 ppm of FSR / °C

Accuracy Deviation: ± 2.5 mV max ± (0.5 mV / °C max)
Droop, Drift, & Peak-to-Peak noise: Less than 1 mV RMS over 10 minutes (± 2° C)
Output Impedance: 0.1 Ω max
Output Drive: ± 5 mA min
Output Protection: Survives dc short to common
Settling Time: 2.5 msec to .003% FS for 20 V change
Maximum Latency Time For Channel Voltage Change: 8 msec
Connector: AMP 204731-2   36-Pin

DIGITAL INPUT
Each channel is separately settable and readable by either 16 bit offset binary encoding or 16 bit two's complement.

COMPUTER COMMANDS
X = Q =1: Returned for F(3) and valid F(16) and F(0)
Q = 0 (X =1): Returned for F(16) and F(0) during module initiation (Power-up or CAMAC Z)
Z: Sets all outputs to 0 volts (reads 1, 2's Comp.)
All channel outputs set to 0 volts on powerup
F(0)A(N): N = 0 to 15, Reads output register for channel n
F(3)A(0): Reads module I.D. (3016) (Also field strappable for serializing)
F(16)A(N): N = 0 to 15, Writes data to channel register using W1 . . W16

POWER REQUIREMENTS

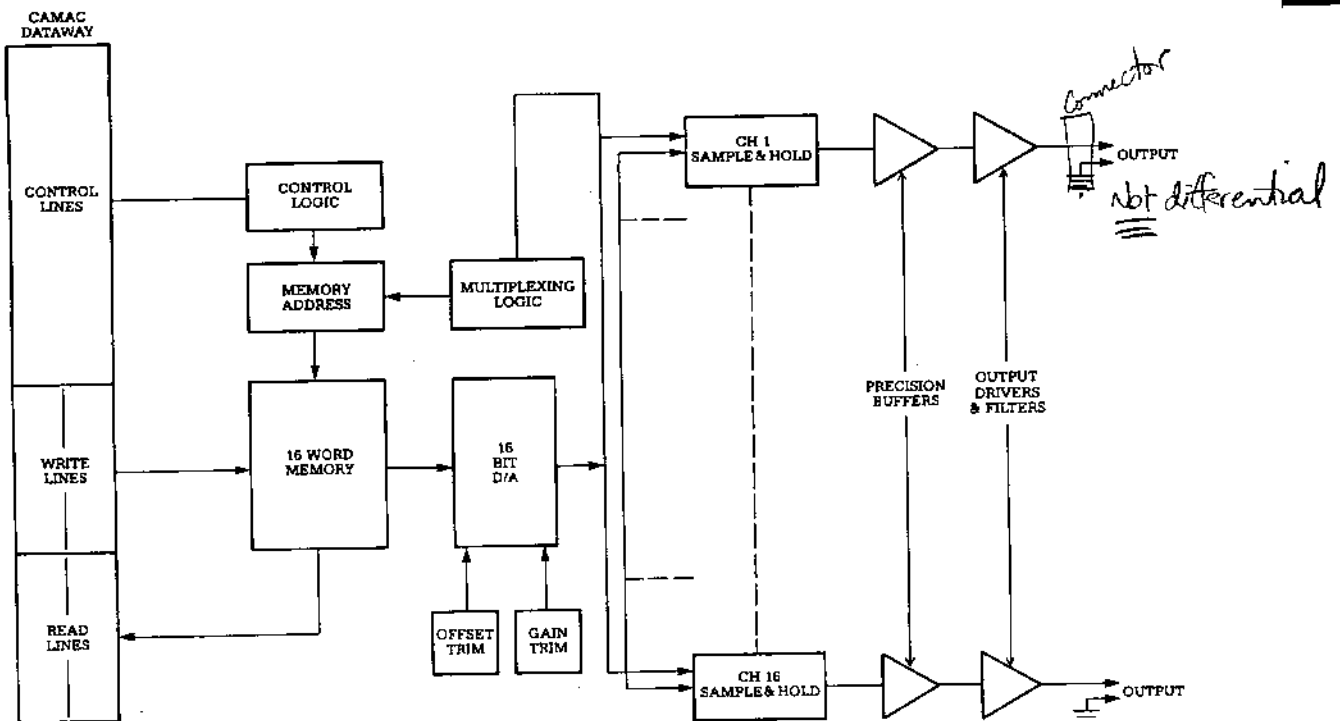|		
+ 6 V	700	mA
+ 24 V	200	mA
– 24 V	240	mA

MATING CONNECTOR
Amp 36 Pin connector (P/N MC3016) is included.

PACKAGING
1 width CAMAC Module
221 mm H, 18 mm W, 292 mm D*) 8.7" x 0.7" x 11.5")
*Depth front t o rear panel. Rear connector 13 mm (0.5")
In conformance with the CAMAC standard for RF shielded instrumentation modules (IEEE standard 583 European Esone Report #EUR4100e).

TEMPERATURE RANGE
0°C to 40°C (32° F to 104° F) to operate within specifications when installed in crate with enough air flow to hold maximum air exit temperature 55° C (131° F).

MODEL 3016 BLOCK DIAGRAM