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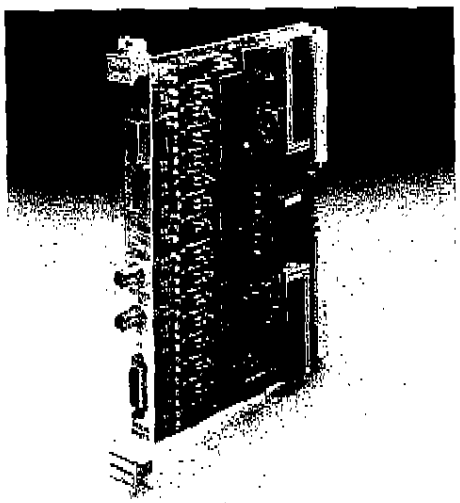
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Find the *Analogic DVX-2601* at our website: ***Click HERE***

16-Bit Precision, 16 Channel Multiplexer– Simultaneous S/H

VME and VXI Compatible



Introduction

The DVX 2601 is the first high speed, high precision multiplexer card to combine 16 very accurate sample-and-hold (S/H) channels with high speed sampling and the compactness of a dual eurocard (6U) VME format (VXI size B). Compatible with VXI specification Rev. 1.3 regarding P2 connector, this 16 channel, differential, simultaneous S/H multiplexer occupies a single slot in a VME chassis and provides an unmatched price performance ratio when used in combination with an Analogic DVX 250x Digitizer card. Reflecting the Analogic expertise in precision analog signal conditioning, the DVX 2601 has been designed to meet the stringent demands of fast and accurate measurements associated with multichannel data acquisition used for simultaneous sampling in applications such as vibration analysis, rotating machinery testing, automotive and jet engine testing as well as analysis of large mechanical structures and other complex mechanisms.

Sixteen shielded, differential inputs are provided with both voltage and current protection, and a passive, one pole, low pass filter. Each input is buffered via an instrumentation amplifier with excellent common mode rejection ratio (CMRR) into a 16-bit accuracy, superior performance, S/H circuit. Its acquisition time, hold mode settling time, droop rate and feedthrough isolation assure true 16-bit performance up to 200 kHz aggregate sampling rate in the single output mode, and 400 kHz in the dual output mode. The S/H circuits are multiplexed into 2 analog buffers that provide the drive for the 2 isolated TWBNC output connectors. The simultaneous clocking of all S/H circuits, as well as the addressing of multiplexers, are performed by the digital subsection of DVX 2601 that buffers and decodes the control signals received from an associated DVX 250X A/D converter card. All digital controls are exchanged via VXI lines located on the P2 connector. For self-test purposes, a reference and/or a ground voltage can be switched into 2 S/H inputs. The status of a software controlled pass/fail test can be displayed by a green/red light emitting diode (LED) indicator mounted on the front panel of the card. The same panel provides two 8 channel input connectors, 2 output connectors and a 3 position card address DIP switch.

Two ultra-low noise dc-to-dc converters, requiring only +5V input, generate the power for the entire analog section of the board. By being fully isolated, the DVX 2601 provides a complete system solution for an analog multiplexer with simultaneous sampling. Multiple boards can interconnect with a single data acquisition board such as the DVX 25XX Series to produce a precision front-end with up to 128 simultaneous S/H channels.

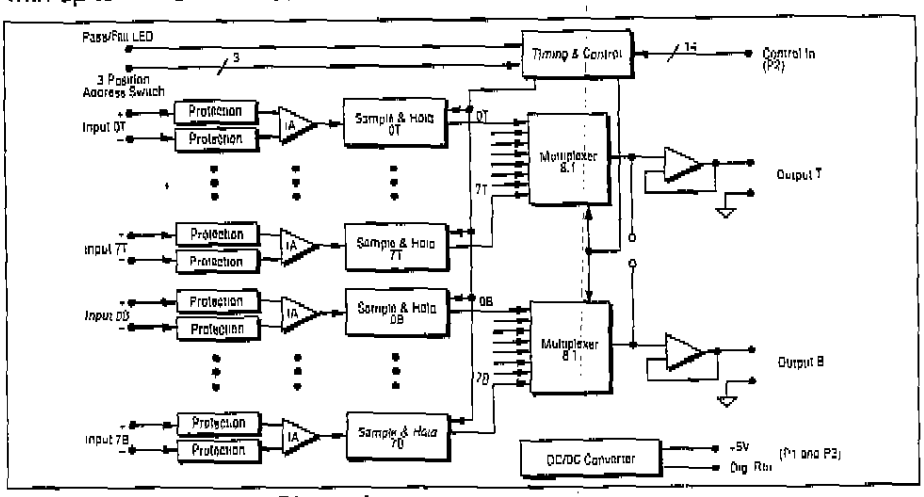


Figure 1. The DVX 2601 Block Diagram.

Features

- True 16-Bit Precision
- 200 kHz Aggregate Sampling Rate Single Output Mode, 400 kHz using Dual Output Mode, Greater with Multiple Units
- 16 Differential Inputs
- Voltage & Current Input Protection
- Fully Shielded and Isolated Inputs and Power
- Excellent CMRR
- 16 Precision S/H Circuits
- 200 ps Aperture Uncertainty
- Peak Harmonic Distortion, –96 dB
- VXI Conformity
- DC to DC Converter, Powered by only +5V
- Self-Test Capability
- Fully Compatible with the Analogic DVX 250x Series of Data Acquisition System Cards

Applications

- Multichannel Data Acquisition
- Simultaneous Events Analysis
- Monitoring and Control
- Automatic Test Equipment
- Audio
- Sonar

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DVX 2601

Specification[1]

ANALOG INPUTS

Number of Channels
16 Differential
Input Range
±10V
Input Bias Current
5 nA Max.
Input Resistance
10^8 Ω Typ.
Input Low Pass Filter
500Ω, 2000 pF
Common Mode Voltage
±10V Max.
Input Overvoltage Protection
±25V Max.
Input Current Protection
50 mA Max.

ANALOG OUTPUTS

Number of Outputs
2 (One Per 8 Channel Section)
1 (For All 16 Channels)
Output Range
±10V
Output Resistance
1Ω Typ.
Output Capacitance
5 pF Max.

INPUT BUFFER AMPLIFIER

Gain
1 ±0.02%
Offset
±2 mV Max.
Slew Rate
7 V/µs Typ.
Channel Separation
120 dB (@ 1 kHz) Typ.

SAMPLE-AND-HOLD CIRCUIT

Track Mode
Full Scale Linear Input Range
±10V
Full Power Bandwidth
200 kHz
Small Signal Bandwidth
2 MHz
Acquisition Time (to 0.0015% of 10V Step)
2.5 µs Max.
Hold Mode
Track-to-Hold Transient Settling Time (to 0.0015% of 10V Step)
0.5 µs Typ., 1 µs Max.
Aperture Delay
25 ns Max.
Aperture Uncertainty
±200 ps RMS
Output Offset Plus Pedestal
15 mV Typ.
Droop Rate
0.3 µV/µs Max.
Dielectric Absorption Factor(5)
0.0001

DYNAMIC CHARACTERISTICS

Maximum Sampling Rate
200 kHz aggregate for single output mode.
400 kHz aggregate for two output mode.
Differential Crosstalk
–100 dB (@ 1 kHz) Typ.
Peak Harmonic Distortion(2,4)
–96 dB (@ 1 kHz) Typ.
Total Harmonic Distortion(3,4)
–92 dB (@ 1 kHz) Typ.
Noise
(Referred to input and measured over 600 kHz bandwidth, Noise Gain = 2)
50 µV RMS Max.
Channel Switching and Settling Time to 1 LSB after 10V Step
2.5 µs Max.

TRANSFER CHARACTERISTICS

Accuracy
16 Bit
Gain
1 ±0.02%
CMRR
96 dB @ 60 Hz
Integral Non-Linearity
±0.003% FSR Max.

STABILITY (0°C TO +50°C)

Required Warm-up Time (for ultimate specifications)
15 minutes
Offset Tempco
50 µV/°C Max.
Gain Tempco
20 ppm FSR/°C Max.
Droop Rate
Doubles for every 10°C

DIGITAL CONTROL

Logic Levels TTL/CMOS Compatible
Logic "0"
0.8V Max.
Logic "1"
2.0V Min.
Loading
1 LSTTL Load

SAMPLE-AND-HOLD

Sample
Logic "0"
Hold
Logic "1"
Required Rise Time
5 ns Typ.
Board Address Setting
3 positions DIP Switch on Front Panel

FRONT PANEL INDICATOR

Pass/Fail LED
Green/Red

POWER REQUIRED

+5V Supply
+4.75V Min., +5.25V Max.
Power Consumption
18W Max.

ENVIRONMENTAL AND MECHANICAL

Temperature Range
Rated Performance
0°C to +50°C
Storage
–25°C to +75°C
Relative Humidity
0 to 85% non-condensing up to +40°C
Recommended Forced Air Cooling
10 cubic feet per minute
Dimensions
6U
Front Panel Potential
Chassis Ground
Weight
1.15 lb / .52 kg

NOTES:

1. Unless otherwise noted all specifications apply at +25°C.
2. Peak Distortion represents the ratio between the highest spurious frequency component below the Nyquist rate and the signal.
3. Total Harmonic Distortion represents the ratio between the RMS sum of all harmonics up to the 20th harmonic and the RMS value of the signal.
4. ±10V input signal.
5. *The error voltage caused* by dielectric absorption can be calculated from the following expression:

$$Err = \Delta Vin \cdot K \cdot Log_{10}[1+(Th/Ts)]$$

where

- ΔVin= the voltage difference between the previous and the current samples
- K= 0.0001, the dielectric absorption constant for the hold capacitor in the S/H circuits used in the S/H MUX
- Ts= the period that the sample/hold circuit is in the "sample" or "track" mode
- Th= the period between the end of the sample period and the instant of conversion

Also see Analogic application note AD-1046

Specifications subject to change without notice.

Ordering Guide

DVX 2601
16 Channel MUX with S/H

DVX 2601-B05
For use with DVX 250x-B05

DVX 04 required for VME P2 backplane. See "Accessories" for description.

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