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16-Bit, 200 kHz, 4 Channel D/A Waveform Generator

in a "C" Size VXI Module

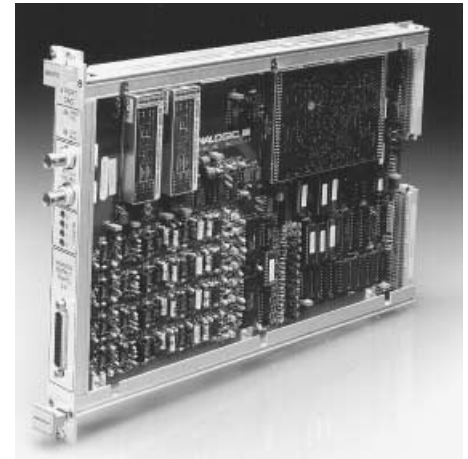
Introduction

The DBS 8751A/8752A is a high speed, 16-bit, 4-channel waveform generator of superior performance, fully compliant with the VXI subsystem specification Rev. 1.3 for a Register Based "C" size module. The DBS 8751A/8752A is designed to meet the stringent requirements of waveform generation for testing of audio range components such as Codec chips used in communications equipment and driving exciters for vibration testing.

Each output channel of the DBS 8751A/8752A consists of a 64K word block of data memory that is transformer coupled to a high speed, 16-bit, digital-to-analog converter (DAC); followed by a deglitching amplifier; a 6-pole, 21 kHz Butterworth filter of superior performance; and 2 differential/single-ended output drivers per channel. All channels are updated by a precision, programmable sampling clock whose rates are 204.8 kS/s to 3.6 kS/s in 1006 steps. The user can supply sampling clock and external trigger signals via front panel BNCs or TTLTRG lines. Data sets are downloaded from VXI resident memory using the on-board DMA controller or via PIO operations.

Full electrical isolation is provided by deriving all analog power from the +5V input to the card, using an ultra-low-noise DC-DC converter.

For ease of integration, a selection of available software drivers is offered for use with the card. No device specific coding is required of the user as all commands are included in the driver.



Features

- 16-Bit Resolution
- 4 Independent Channels
- Differential/Single Ended Outputs
- 64K Word Data Memory/Channel
- Programmable Sampling Clock
204.8 kHz to 3.0 kHz in 1006 Steps
- Reconstruction Filter
6 Pole Butterworth
- Output Isolation
500 Vdc Max.
- Software Drivers Available

Applications

- Audio Signal Generation
- Communications Testing
- Arbitrary Waveform Generation
- Vibration Excitation
- Acoustic Signature Analysis
- Biomedical Device Testing

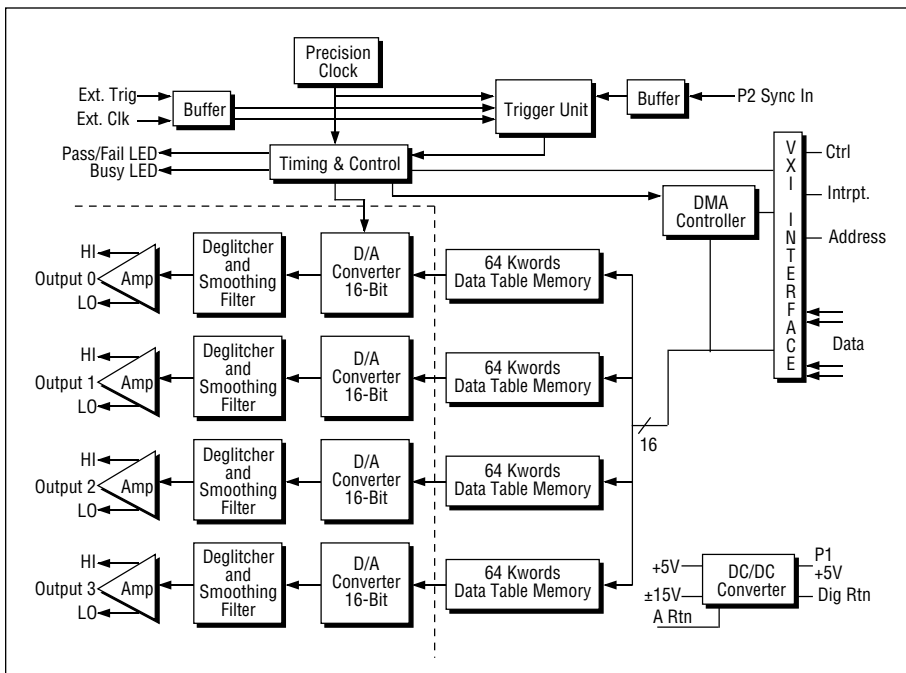
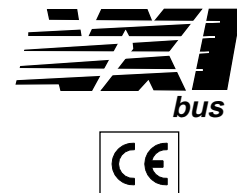


Figure 1. The DBS 8751A/8752A Block Diagram.



DBS 8751A/8752A

Specifications¹

ANALOG OUTPUT

Number of Channels

4 with 2 Outputs per Channel

Resolution

16 Bits

Output Voltage

Differential/Single Ended

±5V/±10V (DBS 8752A)

±3V/± 6V (DBS 8751A)

Offset

±30 mV Max.

Slew Rate

7 V/μs Min.

Output Drive Current

40 mA per Output

DC Gain Error

±0.5%

FILTER CHARACTERISTICS

Corner Frequency

21 kHz

Attenuation Rate

36 dB per Octave

Settling Time (Step input)

100 μs Typ.

Overshoot (Step input)

30% of FSR Typ.

Flatness in Pass Band

±0.2 dB Max. at 0–10 kHz

DYNAMIC CHARACTERISTICS

Sampling Rate

204.8 kHz to 3.6 kHz in 1006 Steps

Channel to Channel Crosstalk

–88 dB Max.

Signal to Noise (with filter)

+84 dB Typ.

Peak Distortion²

–95 dB @ 10 kHz Typ.

Total Harmonic Distortion³

–90 dB @ 10 kHz Typ.

TRANSFER CHARACTERISTICS

Integral Non-Linearity

30 ppm FSR

Differential Non-Linearity

60 ppm FSR

Monotonicity

14 Bits Guaranteed

STABILITY (0°C TO +50°C)

Required Warm-up Time (for ultimate specifications)

15 Minutes

Offset Tempco

12 ppm FSR/°C Max.

Gain Tempco

70 ppm FSR/°C Max.

Precision Clock

3.6864 MHz ±0.001%

DIGITAL INPUTS

Logic Levels

TTL/CMOS Compatible

Logic “1”

2.0V Min.

Logic “0”

0.8V Max.

Termination

50Ω in Series with 200 pF

External Clock

As a Sampling Clock via Front Panel
Connection or TTLTRG Line

TTL Active Low

2.0 μs Min.

As a Precision Clock via Front Panel
Connection or TTLTRG Line

2.4 MHz to 4.0 MHz

External Trigger (Start/Stop)

Input via front panel connector or TTLTRG line.

Negative-going pulse, 30 nS wide min.

Output via TTLTRG line.

SAMPLING MODES

Internal

Derived from Internal Precision Crystal
Controlled Clock

External

Supplied by User, either as Precision 2 MHz to
4 MHz Clock for Division or as Absolute
Sampling Clock

DATA TRANSFER

Input Coding

Two's Complement

On-Board DMA Controller

0.8M Word/Sec. Typ.

PIO Operation

Register Write of Each Data Word

VXI/VME COMPLIANCE

VXI

Master A24 D16 RWD

Resister Based, Local Bus User

Interrupt

Seven Level, Jumper Selectable

VME

Slave A16 D16 I7

GROUP ISOLATION

500 Vdc Max.

FRONT PANEL INDICATORS

Pass/Fail LED

Green/Red

DMA Transfer Active

Green

DAC #0 Running LED

Green

DAC #1 Running LED

Green

DAC #2 Running LED

Green

DAC #3 Running LED

Green

POWER REQUIRED

+5V Supply

+4.75V to +5.25V

Power Dissipation

20 watts 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 to 40°C

Cooling

1.6 litre/sec. airflow for 10°C rise at 0.49 mm
H₂O back perssure

Dimensions

VXI “C” Size, Single Slot

Front Panel Potential

Chassis Ground

Weight

3 lbs, 4 oz/1.47 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 test 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 test signal.

Specifications subject o change without notice.

Ordering Guide

DBS 8751A

16-Bit Waveform Generator

DBS 8752A

16-Bit Waveform Generator

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ANALOGIC 

*The World Resource
for Precision Signal Technology*

Printed in U.S.A.

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Bulletin No. 16-100545 REV 1 3/97 2.5M



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