



# NMIS-4000 8-CH 8-BIT DAC CARD

The NMIS-4000 Digital-to-Analog Converter Card, in 2x4"s™ format, provides a JEDSTACK™ computer system with two channels of Digital-to-Analog output. The Analog Devices AD558 "DAC Port", Digital-to-Analog Converter chips are memory mapped by the card. They provide one 8-bit D/A voltage output each. The NMIS-4000 can also accept additional AD588's. Up to six additional (eight total) "DAC Ports" can be added.

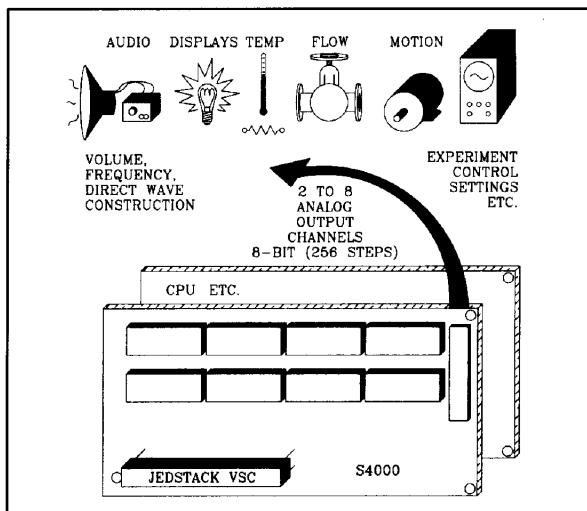
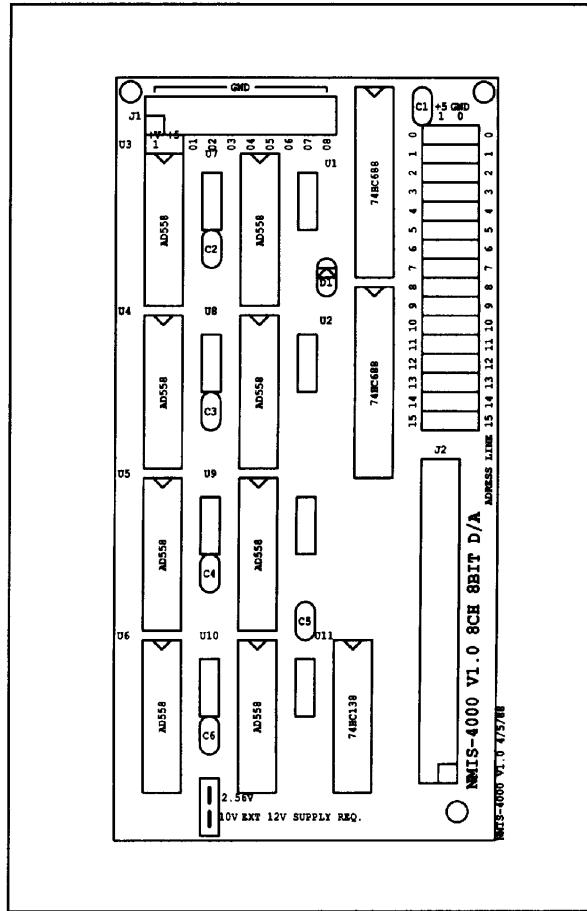
## FEATURES

- Two channels of 8-bit Digital-to-Analog output
- Up to six additional channels can be installed
- Analog Devices AD558's DAC chips used
- Output is buffered voltage, rather than current
- Output range from 0 to 2.56V
- Alternate 0 to 10V range with additional external power supply

The "DAC Ports" allow the D/A outputs to range from 0 to 2.56V, with one binary increment representing 10 millivolts. By the addition of an external power supply and a few changes made on the board, an alternate 0 to 10V range may be selected for each individual output.

A 20-pin connector, labeled J1, has the various D/A outputs and returns, and two voltage-supply pins and their returns. Two columns of 16-pin sockets hold the D/A chips. The Digital-to-Analog Converter chips, Analog Devices AD558's, are the key parts on the board. Each is a self-contained, 8-bit DAC with an internal precision bang-gap reference and an opamp buffer. Beside each DAC is a 3-pin jumper which allows selection of either a 2.56 or 10V output range.

A Vertical Stacking Connector in the lower right hand corner (top view) provides connections to the processor's address and data bus, control signals, 5V power and ground. Address decoding of the Digital-to-Analog Converter chip's space in memory is accomplished by two octal comparators and 16 two-position jumpers. Each jumper setting corresponds to the state of a particular address line. The NMIS-4000 occupies 8 addresses. Any 8-byte boundary in the 64K address space of the JEDSTACK™ bus can be selected by correct jumper placement.



## Application

**NMIS-4000****8-CH 8-BIT DAC CARD****2x4"s****NMIS-4000**

**NMIS-4000****8-CH 8-BIT DAC CARD****2x4"s****DESCRIPTION**

The NMIS-4000 D/A card is designed to stack on the 2x4"s™ NMIS Series, the "100 Squared"™ NMIX and the "Generic Target Computer"™ NMIT Series (with the Vertical Stacking Connector added to the latter) of single board computers. The JEDSTACK™ provides the interface signals to the board including address lines, data lines, control lines and 5V power and ground. The fast AD558's allow 200nS write times.

The AD558 DAC's are complete, voltage-output, 8-bit, Digital-to-Analog Converters, including output amplifiers, full microprocessor interface and precision voltage reference on a single monolithic chip. No external components or trims are required to interface, with full accuracy, an 8-bit data bus to an analog system.

The performance and versatility of the AD558 DAC is a result of several recently developed monolithic bipolar technologies. The complete microprocessor interface and control logic is implemented with Integrated Injection Logic (I<sup>2</sup>L), an extremely dense and low power logic structure that is process compatible with linear bipolar fabrication. The internal precision voltage reference is the patented, low-voltage, band-gap circuit which permits full accuracy performance on a single +5V to +15V power supply. Thin film, silicon-chromium resistors provide the stability required for guaranteed monotonic

operation over the entire operating temperature range, while recent advances in laser-wafer-trimming of these thin-film resistors permit absolute calibration at the factory within +/- 1LSB; thus no user trims for gain or offset are required. A new circuit design provides voltage settling to +/- 1/2LSB for a full-scale step in 800nS. The inclusion of the precision low-voltage, band-gap reference eliminates the need to supply a separate reference source.

The output from each AD558 is routed to the J1 connector. Coming back from the J1 is the +V supply. The factory default connects this supply to the +5V rail at the J1 connector, allowing operation only in the default 2.56V output range. The user can supply a +4.5 to +16.5V external supply. Adding an external supply may reduce digital power supply noise that might ride through on the outputs. If this supply is above 11.4V, operation in the 10V output range is allowed.

ADDRESS	DAC #
XXX0	1
XXX1	2
XXX2	3
XXX3	4
XXX4	5
XXX5	6
XXX6	7
XXX7	8

**Register Summary****WORLD HEADQUARTERS****WORLDWIDE REPRESENTATIVES**

AMERICA (N, C & S)	CENTRAL EUROPE	SOUTHERN EUROPE	SCANDINAVIA	ASIA
<b>NEW MICROS, INC.</b> Sales Department 1601 Chalk Hill Road Dallas, TX 75212, USA Phone: (214) 339-2204 Fax: (214) 339-1585 G3, G2, FMG1 User Bulletin Board: (214) 339-2321 24/12, E, 8, I	<b>MS</b> Microscan Electronic GmbH 31 Ueberseering P O Box 601705 D 2000 Hamburg 60 WEST GERMANY Phone: 0 40163 20 03-0 Fax: 0 40/63 20 03-49 Telex: 2 13 288	<b>DEMEL</b> G. Demel Handelsges. m.b.H. Hoffmeistergasse 8-10/1/4, A-1120 Vienna, AUSTRIA Phone: (0043) 0222 813 2507-0 Fax: (0043) 0222 85 95 93 Telex: 75311851	<b>FIELD OY</b> <b>ELECTRONIHKARYHMA</b> P O Box 131 SF 00601 Helsinki, FINLAND Phone: 358 0 757 1011 Fax: 358 079 8853 Telex: 12-2022 FIELD SF	<b>CIBI TRADING INT'L</b> 20 Matimiman Street Teacher's Village, Diliman Quezon City, PHILIPPINES Phone: (632) 922-2988 Fax: (632) 921-8027



**NEW MICROS, INC.**  
**1601 Chalk Hill Road**  
**Dallas, Texas 75212**  
**Tel: (214)-339-2204**