NMIS-3010 8CH CURRENT S'RCE CARD

The NMIS-3010 8-Channel High Current Source Card, in 2x4"s™ format, provides a JEDSTACK™ computer system with control of 8 sets of High Current Source Transistors. The outputs are arranged to be easily connected by screw terminal connectors to individual wires.
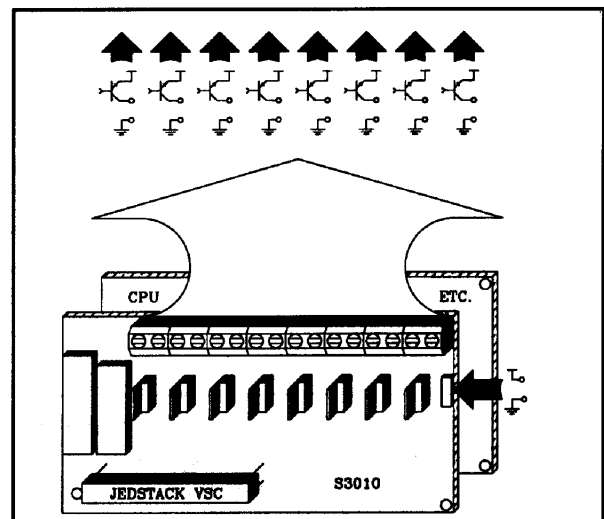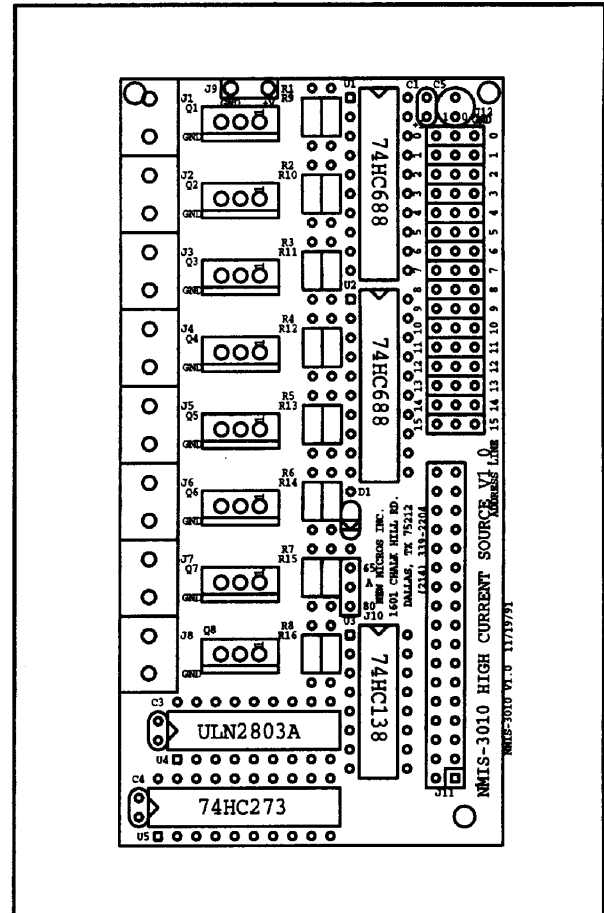
- 8 TIP106 PNP Darlington transistors

- High current switching rating:

    8-Amps (w/external heat sinks)

    80-VDC

- Commutation diode for inductive load protection

- Socketed resistors program base current drive

- Screw terminals for easy connections to loads

- Terminals for ground and +V connections

- Latched outputs

- Power on reset turns all sources off

Connectors J1 through J8 attach the individual current sources. TIP106 transistors are provided on the board. Connections are arranged so loads, such as lamps or relays, etc., can be directly wired across the terminals.

An 8-bit latch sets the output states controlling the current sources. An octal sink driver provides the necessary current sinking and level shift to drive the bases of the high current source transistors. The sink driver is inverting, making programming more easily understood. A decoder chip is used to generate the chip select and timing information to operate the 8-bit latch.

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 latch'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-3010 occupies a single address location. Any byte location in the 64K address space of the JEDSTACK™ processor's bus can be selected by correct jumper placement.

NMIS-3010 8CH CURRENT SOURCE CARD 2x4"s

The NMIS-3010 8-Channel High Current Source 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 interface signals to the board including address lines, data lines, control lines and 5V power and ground. The fast HC devices allow access times approaching 90nS.

The addressing of the octal latch on the NMIS-3010 is sensed by two 74HC688 (U1 and U2) octal comparators that decode the 16 address lines (A15 - A0) and one control line in order to select only one active location out of a 64K address space. The active address location is user-set by the arrangement of addressing jumpers. Each address line can be sensed for high or low condition.

When the set address is selected by the processor, the 74HC688's generate a chip select to the 74HC138. This signal is also coupled back on the VSC, via the diode, D1, to the MEMDIS' pin. On a write, the 74HC138 strobes an octal latch, 74HC273 (U5). The 74HC273 is connected directly to the Data Bus from which it accepts data from the processor. It, in turn controls an octal sink driver, UDN2803A (U4), driving the transistors.

Since the bases in the current sources are driven from the +V supply, there is an inversion between the latch's written data and the state of the current source. When a zero is written, the current source transistor is off. The UDN2803A is not sinking, meaning the transistor can

not source. When a one is written, the UDN2803A is sinking, allowing the transistor to source. (This is the inverse of the "logic" condition sensed by a logic probe at the source terminal with a pull up to +5V.)

The UDN2803A's outputs can withstand voltages up to 80V. This limits the maximum voltage applied to the source terminals to 80V which feeds back to the outputs via the base's resistor divider network. Output drive capability of the UDN2803A's, with all drivers on continuously, is 120 mA per driver. This far exceeds the saturation requirements of the transistors.

The TIP106 transistors used for current sources provide the functionality of the NMIS-3010. They allow switching control of up to 8 Amps at 80 VDC. The supplied current limiting resistor (47 Ohms) in each transistors base leg sets the current from each driver to 80 mA to assure saturation at 8 Amps if +5V is supplied on +V. With each drawing around 80 mA base drive when activated, when all bases are activated at once, the total current of the board will be about 640 mA from +V. Larger resistors can be selected to reduce the drive, and thereby reduce overall requirements on the +V supply. At 3 Amps, 20V, the transistor can be saturated with a 6 mA drive (3K Ohms). Higher voltages require larger resistor values be placed in the limiting resistor's sockets.
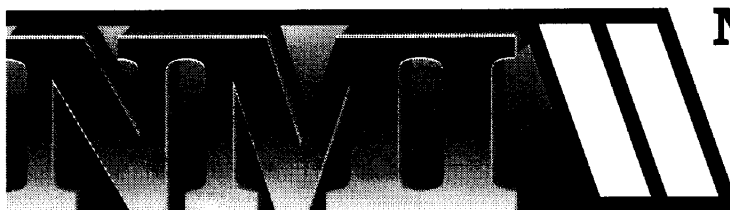
ADDRESS	Bit # 7	Bit # 6	Bit # 5	Bit # 4	Bit # 3	Bit # 2	Bit # 1	Bit # 0
XXXX	J8	J7	J6	J5	J4	J3	J2	J1

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