NMIS-7022 8CH SPST RELAY CARD

The NMIS-7022 8-Channel 8A SPST Relay Card, in 2x4"s™ format, provides a JEDSTACK™ computer system with control of 8 sets of Single Pole Single Throw (SPST) relays with normally open (N.O.) contacts. The outputs are arranged to be easily connected by screw terminal connectors to individual wires.

FEATURES

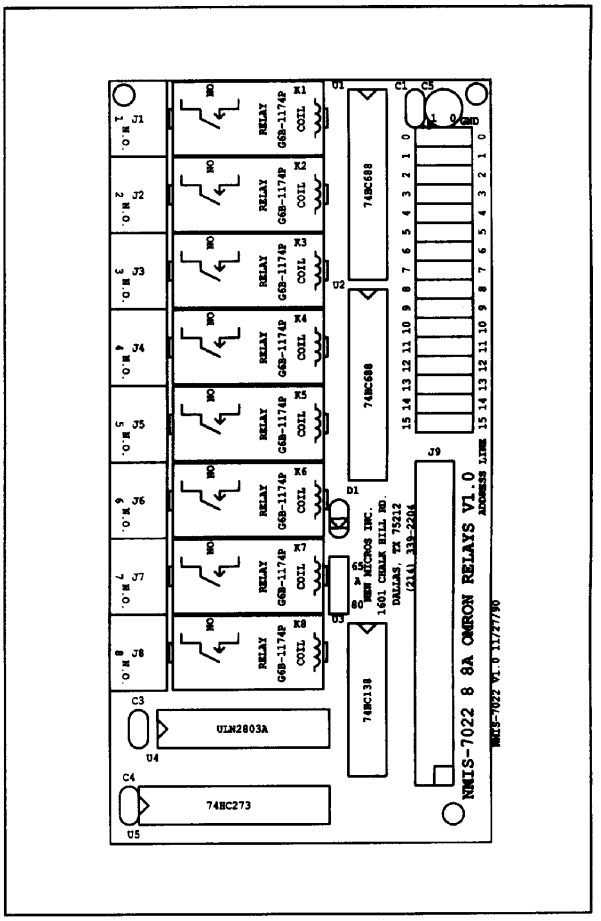
- 8 Omron G6B-1174P-US-DC5 SPST Relays
- Very compact design
- High current contacts rating:

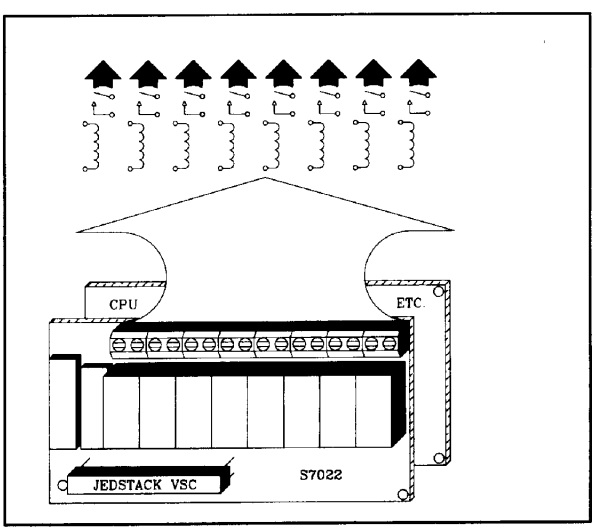
  8-Amps @ 30VDC

  8-Amps @ 250VAC
- Screw Terminals for easy wire connections
- Computer interface buffered for coil drive
- Latched outputs

Connectors J1 through J8 attach the individual output control points (NO-COM) to the relay contacts. Eight Omron G6B-1174P-US-DC5 SPST Relays are provided on the board. Two I.C.'s form the computer interface to the relays. One is an 8-bit latch, which sets the output states controlling the relays. The other is an octal Darlington driver, which provides the necessary current handling ability to drive the relays, and coincidentally inverts the written signals 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-7022 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.





Application

NMIS-7022

NMIS-7022 8CH SPST RELAY CARD 2x4"s

DESCRIPTION

The NMIS-7022 8-Channel 8A SPST Relay 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 Omron G6B-1174P-US-DC5 SPST Relays are compact mechanical relays that form the heart of the function of the NMIS-7022. They allow control of up to 8.0 Amps at 24 VDC or 8 Amps at 250 VAC. The relays have a nominal coil resistance of 125 ohms. They will each draw around 40 mA when activated. When all coils are activated at once, the total current of the board will be about 320 mA. Although most of the circuitry is CMOS, the nature of the mechanical relays requires relatively high current operations.

The SPST Relays are controlled by an octal latch, 74HC273 (U5), and Darlington inverting buffer, ULN2803 (U4). The addressing of the octal latch on the NMIS-7022 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. The 74HC273 is connected directly to the Data Bus from which it accepts data from the processor. Since the coils in the relays are tied to the +5V supply, there is an inversion between the latch's written data and the state of the relay. When a zero is written the coil must be off. The ULN2803 provides the desired inversion, as well as the current boost to operate the coils. When a zero is written to the latch, the ULN2803 is off, leaving the coil de-energized.

Manufacturer's specifications list output drive capability of the ULN2803's at a peak sink current of 500 mA. for each driver. While it can handle voltages up to 50V, the supply on the board is the digital 5V rail. These ratings far exceed the requirements of the relay coils.

The designs give isolation voltage ratings between input and output exceeding 125 VACrms.

ADDRESS	Bit # 7	Bit # 6	Bit # 5	Bit # 4	Bit # 3	Bit # 2	Bit # 1	Bit # 0
XXXX	Relay 8	Relay 7	Relay 6	Relay 5	Relay 4	Relay 3	Relay 2	Relay 1

Register Summary

NMIS-7022

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