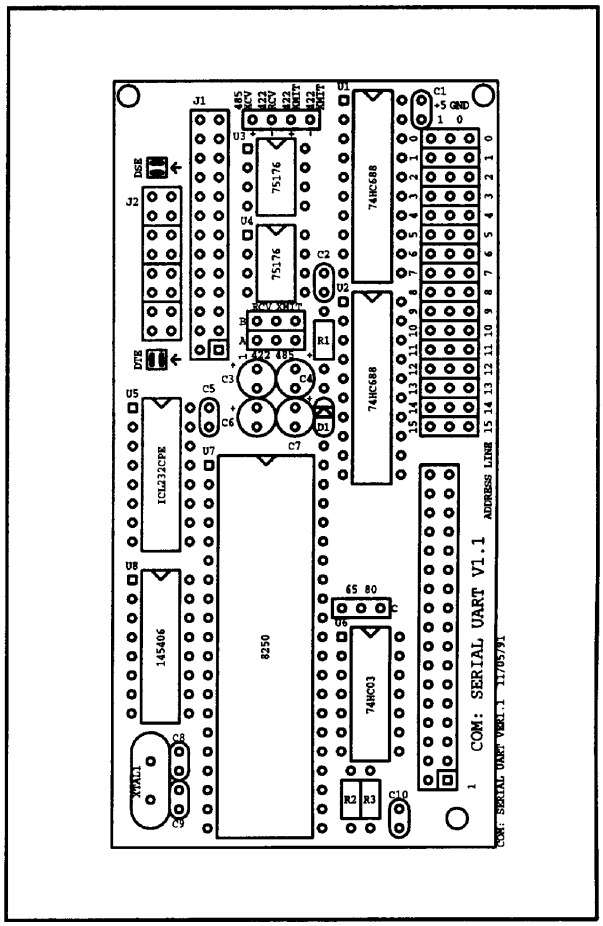
NMIS-5005 COM: SERIAL UART CARD

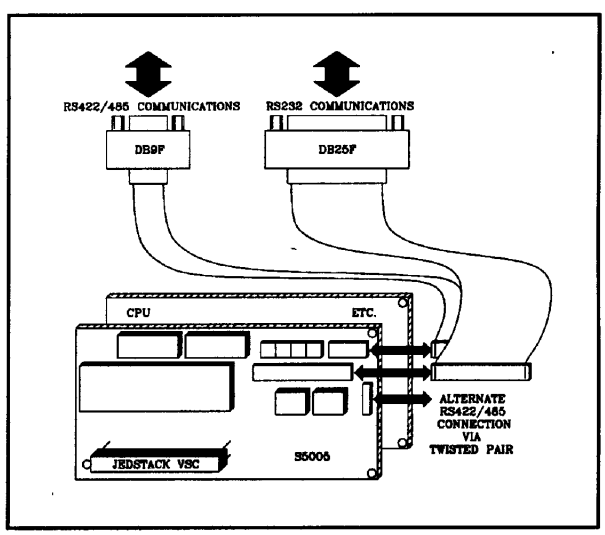
The NMIS-5005 Com: Serial UART Card, in 2x4"s™ format, provides a JEDSTACK™ computer system with an industry standard asynchronous serial data transmission capability (RS-232C, RS-422, modified RS-422, or RS-485). It is similar in function to an PC's serial port.



- Full duplex RS-232, RS-422, modified RS-422, or RS-485 operation with buffered receiver and transmitter
- Data set/modem control functions (DTR, DSR, RTS, CTS, DCD & RI)
- Internal baud rate generator with programmable baud rates (50 to 56K)
- Programmable word lengths, number of stop bits, parity bit generation and detection
- Programmable control for transmit, receive, line status and data set interrupts
- Charge pump for +9V/-9V supplies
- Jumper selectable DTE or DSE configuration
- IBM PC serial port combatible design

The INS82C50 Universal Asynchronous Receiver/Transmitter (UART) device is memory mapped into the JEDSTACK-34™ system's address space by the card. J1 and J2 provide the RS-232 cable connection and configuration. J1 is an IDC, 26-pin cable connector, designed to accept a flat ribbon cable. The J2 connector is really not a connector at all, as such, but a jumper field to direct the correct signals to the connected equipment. Connector J3 is used for RS-422/485 signals. Only one standard, RS-232, RS422, or RS-485 can be selected at a time.

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 UART 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-5005 occupies 8 addresses. Any 8-byte boundary in the 64K address space of the JEDSTACK™ processor's bus can be selected by correct jumper placement.



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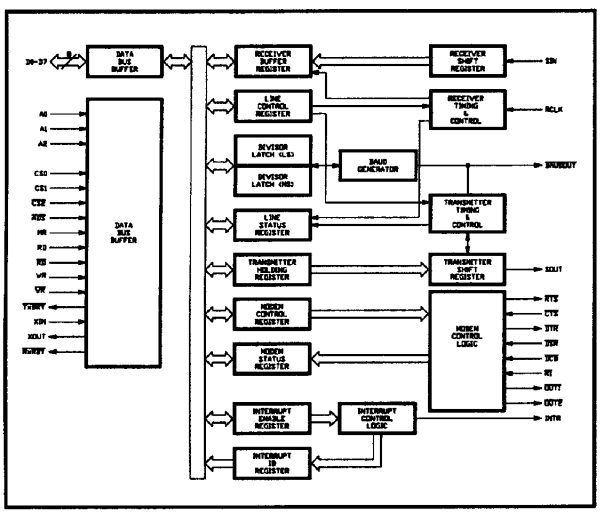
The UART performs serial-to-parallel conversion on data received from a peripheral device or MODEM, and parallel-to-serial conversion on data received from the CPU. The CPU can read the complete status of the UART at any time during the functional operation. Status information reported includes the type and condition of the transfer operations being performed by the UART, as well as any error conditions (parity, overrun, framing, or break interrupt).

The UART has false start bit detection, and line break detection and generation. It has loop back capabilities to aid in testing. Word lengths are programmable to 5,6,7 or 8 bits; even, odd, or no parity; and 1, 1.5 or 2 stop bits.



The UART has an internal baud rate generator that is capable of dividing the timing reference clock input by divisors of 1 to (2^{16}-1), and producinga 16x clock for driving the internal transmitter logic. The crystal determines the baud rates. It is normally a 1.8432 MHz crystal for selection of baud rates up to 19,200 baud.

The UART includes complete MODEM-control capability and a processor interrupt system. Interrupts can be programmed to the user's requirements, minimzing the computing required to handle the communication link.

The RS-232 level shifting is provided by two chips. The ICL232CPE is a charge pump producing the elevated +9V and -9V needed for RS-232 communications from a single +5V supply. It also contains two pairs of RS-232 line drivers. The MC145406 contains an additional three pair of line drivers each. These chips convert the CMOS serial data lines to RS-232 levels. The RS-422/RS-485 interface signals are received and translated by two 75176's. The two receiver systems of the RS-232 and RS-422/RS-485 are wire OR'ed together. Only one set of drivers for one standard can be installed at a time.

ADDRESS	DLAB=0	DLAB=1
XXXX+0	Receiver Buffer (Read) / Transmitter Holding (Write)	Divisor Latch (LSB)
XXXX+1	Interrupt Enable	Divisor Latch (MSB)
XXXX+2	Interrupt ID	Interrupt ID
XXXX+3	Line Control	Line Control
XXXX+4	Modem Control	Modem Control
XXXX+5	Line Status	Line Status
XXXX+6	Modem Status	Modem Status
XXXX+7	Scratch	Scratch

NMIS-5005

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