

### INTRODUCTION

The Wang Model 2236MXE Terminal Processor is an intelligent Z80-based multiterminal controller for 2200LVP and 2200MVP Central Processing Units (CPUs). This device controls Input/Output (I/O) operations between the CPU and the terminals, and buffers data entered from or transferred to the terminal.

Each Model 2236MXE supports four Model 2236D, 2236DE, 2236DW, and 2336DW terminals concurrently, in any combination. The Model 2236MXE performs many terminal control functions, thereby freeing the CPU for processing.

The Model 2236MXE contains Programmable Read Only Memory (PROM) for bootstrap and power-on diagnostics. The 2200 CPU loads software into the Random Access Memory (RAM) of the Model 2236MXE. This allows the Model 2236MXE to perform a variety of additional functions, and provides a convenient mechanism for future device enhancements.

Each port of the Model 2236MXE can be configured to function as an asynchronous communications controller port, thus eliminating the need for a separate asynchronous communications controller.

Other features of the Model 2236MXE include software and hardware selectable transmission rates, software selectable primary terminal ports, a time-of-day clock, and a terminal disconnect capability. Additionally, the Model 2236MXE can perform extensive diagnostic tests.

### MXE OPERATION

The Model 2236MXE Terminal Processor contains separate input and output buffers for each terminal. Three independent communication channels are associated with each terminal. One channel transfers keyed characters to the input buffer. The second channel transfers output buffer information, including echoes of keyed characters, program-generated display output, and system-generated display output. The third channel buffers data sent to the terminal printer.

To accelerate communications between terminals and the Model 2236MXE, automatic data compression is performed. If the same character is output several times, data is sent from the terminal processor in a compressed format and then decompressed at the terminal.

A ready/busy protocol controls information flow between the terminals and the Model 2236MXE. Thus, it is unnecessary for the terminal printer to keep pace with the serial communication data rate.

The Model 2236MXE performs all character-editing operations (for example, move cursor, delete, backspace, and erase). The combination of independent buffering and high-speed, full-duplex communication allows uninterrupted keying with simultaneous display at each terminal in a multiterminal system. All features are automatic and transparent to both the user and the program executing in memory.

### TIME-OF-DAY CLOCK

The Model 2236MXE includes a time-of-day clock that is set when the system is powered on. By using the BASIC language TIME and DATE functions, a user's application can read this clock, thus determining real time usage.

### TERMINAL DISCONNECT

The Model 2236MXE can alert the 2200 CPU when a local or remote terminal has connected or disconnected. With the BASIC language and operating system, a programmer can use the terminal disconnect capability to initiate bookkeeping procedures, force a terminal to disconnect automatically after a specified period of time, or initiate user logon and logoff programs.

### TERMINAL TO MXE INTERFACE

Each terminal can be attached either locally or remotely to the Model 2236MXE Terminal Processor. Communication between the terminal and the Model 2236MXE is asynchronous and full-duplex, with selectable line speeds ranging from 300 to 19,200 bits per second (bps). The four ports on the Model 2236MXE are 25-pin, RS-232-C compatible.

A local cable connection between the Model 2236MXE and a terminal is 25 feet (7.6 meters). For cable distances from 25 feet (7.6 meters) to 2,000 feet (609.6 meters), optional direct connection cables are available. Refer to Table 1.

**Table 1. Direct Connection Cables**

Length in Feet	Length in Meters	Part Number
25	7.6	120-2236-25
50	15.2	120-2236-50
100	30.4	120-2236-1
200	60.9	120-2236-2
300	91.4	120-2236-3
400	121.9	120-2236-4
500	152.4	120-2236-5
600	182.8	120-2236-6
700	213.3	120-2236-7
800	243.8	120-2236-8
900	274.3	120-2236-9
1000	304.8	120-2236-10
1250	381.0	120-2236-11
1500	457.2	120-2236-12
1750	533.4	120-2236-13
2000	609.6	120-2236-14

For cable distances beyond 2,000 feet, two asynchronous full-duplex, 11 bit, RS-232-C compatible modems per terminal must be used to provide the communication link over leased or switched lines. One modem is connected to a port on the terminal processor; the other is connected to a terminal. The Wang Model WA3451

Asynchronous/Synchronous Modem is compatible with Wang Models 2236D, 2236DE, 2236DW, and 2336DW terminals. The Model WA3451 Modem is recommended for switched remote connection of these terminals to 2200LVP or 2200MVP systems.

Cable is optionally available for modem connections to Wang equipment in lengths of 12 feet (3.7 meters), 25 feet (7.6 meters), and 50 feet (15.2 meters). Refer to Table 2.

Transmission rates are manually and software selectable to 110, 134.5, 150, 200, 300, 600, 1200, 2400, 4800, 9600, or 19,200 bps. Additionally, transmission rates are software selectable to 50, 75, and 100 bps. The transmission rate set at the terminal must equal the transmission rate set at the terminal processor port to which the terminal is attached. The user can also reassign the primary port of the Model 2236MXE through software.

**Table 2. RS-232-C Compatible Modem Cables**

Length in Feet	Length in Meters	Part Number
12	3.7	220-0113
25	7.6	220-0219
50	15.2	220-0220

## DIAGNOSTIC CAPABILITIES

When the 2200 system is powered on, the Model 2236MXE automatically performs self-test diagnostics. The Model 2236MXE provides a full set of power-on diagnostic error messages that are displayed on the CRT screen. In addition to the automatic testing, the Model 2236MXE can respond to specific software commands that test the board components, the RAM, and local and remote WA3451 modems.

## ASYNCHRONOUS COMMUNICATIONS

When configured with the proper software package, each port on the Model 2236MXE can act as an asynchronous communications controller. When acting as a communications controller, the Model 2236MXE supports asynchronous transmission rates from 50 to 19,200 bps. The character formats supported by the Model 2236MXE include odd, even, or no parity; 5, 6, 7, or 8 data bits, and 1, 1.5, or 2 stop bits. The current status regarding transmission errors, break signal reception, and modem signals can be requested and received at any time.

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## SPECIFICATIONS

### Operating Environment

Same as the CPU

### Power Requirements

Supplied by the CPU

### I/O Slots Required

One

### Ports

Four RS-232-C

### Wang Terminal Format

Communications Mode

Asynchronous, full-duplex

Character Format

1 start bit, 1 stop bit, 8 data bits, odd parity

### Asynchronous Mode

Communications Mode

Asynchronous, full-duplex, half-duplex

Character Format

1 start bit; 1, 1.5, or 2 stop bits; 5, 6, 7, or 8 data bits; even, odd, or no parity

### Transmission Rates

Wang Terminals

300, 600, 1200, 2400, 4800, 9600, or 19,200 bps

Hardware Selectable

110, 134.5, 150, 200, 300, 600, 1200, 2400, 4800, 9600, or 19,200 bps

Software Selectable

50, 75, 100, 110, 134.5, 150, 200, 300, 600, 1200, 2400, 4800, 9600, or 19,200 bps

## ORDERING SPECIFICATIONS

The terminal processor must be compatible with the 2200LVP or 2200MVP CPU. It must be available in a 4-terminal version and be able to provide local and remote connections. Communication must be asynchronous, full- or half-duplex. Transmission rates must be manually and software selectable to 110, 134.5, 150, 200, 300, 600, 1200, 2400, 4800, 9600, or 19,200 bps. Additionally, transmission rates must be software selectable to 50, 75, and 100 bps.

*Standard Warranty Applies*

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