Model 2228D or Option 28D Data Communications Controller

The Model 2228D or Option 28D Data Communications Controller supports data communications between a 2200 central processor and a Wang or non-Wang data terminal equipment (DTE) device. Either controller supports data communications over leased lines, switched lines, or a local connection. The controllers are available in several versions as listed in Table 1. The Model 2228D Data Communications Controller adds communication capabilities to a Wang 2200 Series LVP or MVP central processor. The Option 28D Data Communications Controller does the same for the SVP central processor. Each version complies with specific standards for physical connection established by the Electronic Industries Association (EIA) and its international counterpart, the CCITT.

These microprocessor-based controllers are designed to support high-level data link protocols such as IBM Synchronous Data Link Control (SDLC), as well as the IBM character-oriented binary synchronous (BSC) protocol and the teletypewriter (TTY) asynchronous protocol. The specific Wang communications software packages supported by these controllers are listed in Table 2.

CONTROLLER OPERATION

The microprocessor in each controller allows distributed processing for data transmission and reception to be concurrently performed by the controller and central processor.

Table 1.   2228D and Option 28D Data Communications Controllers

Controller Model Number		Controller Memory	Physical Connection Standards
For 2200LVP or 2200MVP	**For 2200SVP**		
2228D-4	OP-28D-4	64K	RS-232-C/V.24 and RS-449-C with RS-422-C support
2228D-4E	OP-28D-4E	64K	RS-232-C/V.24 and RS-366/V.25
2228D-8E	OP-28D-8E	128K	RS-232-C/V.24 and RS-366/V.25

Parallel bidirectional data exchange between the controller and central processor, and serial bidirectional data exchange between the controller and modem, are handled by a multichannel direct memory access (DMA) unit.

These controllers are available with a 64K or 128K memory that is used for storage of microcode and for data buffering. When the user selects the on-line communication services of one of the Wang communications software packages, the 2200 central processor loads the controller memory with the appropriate protocol-specific microcode.

The 2228D and Option 28D controllers can send and receive data in either non-return-to-zero (NRZ) or non-return-to-zero-invert (NRZI) mode. Bit insertion, a

requirement of several bit-oriented, high-level data link protocols, is also supported.

CONTROLLER DIAGNOSTICS

Each controller has firmware diagnostics to verify the controller hardware operation. Each time the 2200 central processor is powered on, these diagnostics are run, and a light-emitting diode (LED) shows the resulting controller hardware test status as pass or fail.

COMMUNICATION CAPABILITIES

Selection of the appropriate version of the 2228D and Option 28D controllers depends on the physical connection standards being used. For example, the 2228D-4E,

Table 2. Wang Software Supported by the Controllers

2200 Software Packages Supported	Controllers and Supported Physical Connection Standards				
	2228D-4 & OP-28D-4	2228D-4E & OP-28D-4E		2228D-8E & OP-28D-8E	
	RS-232-C/ V.24	RS-232-C/ V.24	RS-366/ V.25	RS-232-C/ V.24	RS-366/ V.25
3271 BSC Emulation	X				
ICS 2780/3780 Emulation	X	X	X	X	X
ICS TTY Emulation	X	X		X	
Remote WangNet		X		X	
3274 SNA/SDLC Emulation				X	

OP-28D-4E, 2228D-8E, and OP-28D-8E versions of the 2228D and Option 28D controllers have an RS-366/V.25-compatible auto-dial connection interface, whereas the 2228D-4 and OP-28D-4 versions do not provide an RS-366/V.25-compatible interface.

The 2228D-4 and OP-28D-4 versions of the 2228D and Option 28D controllers offer both RS-232-C/V.24 and RS-449-C connectors. A toggle switch allows the user to select either connector for attachment to the data communications equipment (DCE). The RS-449-C connector on the controller includes RS-422-C balanced-circuit support.

The various physical connection standards supported by the 2228D and Option 28D controllers also require software support. For example, as shown in Table 2, only the ICS 2780/3780 Emulation provides RS-366/V.25 software support.

SPECIFICATIONS

Model Numbers
2228D-4 and OP-28D-4 (for RS-232-C/V.24 or RS-449-C)
2228D-4E and OP-28D-4E (for RS-232-C/V.24 and RS-366/V.25)
2228D-8E and OP-28D-8E (for RS-232-C/V.24 and RS-366/V.25)

Power Requirements
Power is supplied by the 2200 Series central processor.

Cable

A standard 12-foot (3.6-meter) cable is provided with each controller. Longer cables can be ordered from Wang by their part numbers.

Modem Selection

All Wang 2228D and OP-28D controllers are DTE interfaces. The 2228D-4 and OP-28D-4 controllers are compatible with RS-232-C/V.24 or RS-449-C DCEs. (Wang Laboratories, Inc., does not provide software support for the RS-449-C interface.) The 2228D-4E, 2228D-8E, OP-28D-4E, and OP-28D-8E controllers are compatible with RS-232-C/V.24 DCEs.

Modem selection depends on many factors, including required line speed, emulator software to be used for communications, and type of modems already installed at the customer site and at the host computer site. Modems at both ends of the communications line must be compatible.

For local connection up to 50 feet (15.2 meters) over RS-232-C/V.24-compatible cables, a Wang null modem can be used. A Wang Model 2227N Null Modem can be used for asynchronous communications. A Wang Model 2228N Null Modem can be used for synchronous and asynchronous communications.

Automatic Calling Unit

The 2228D-4E, 2228D-8E, OP-28D-4E, and OP-28D-8E controllers are compatible with RS-366/V.25 automatic calling units (ACUs).

Supported Line Speeds

The Wang 2228D and OP-28D controllers can support line speeds up to 19,200 bits per second (bps). The range of line speeds supported by an individual controller is determined by the Wang 2200 software package being executed.

Standard Warranty Applies

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Wang Laboratories, Inc., reserves the right to change specifications without prior notice.