

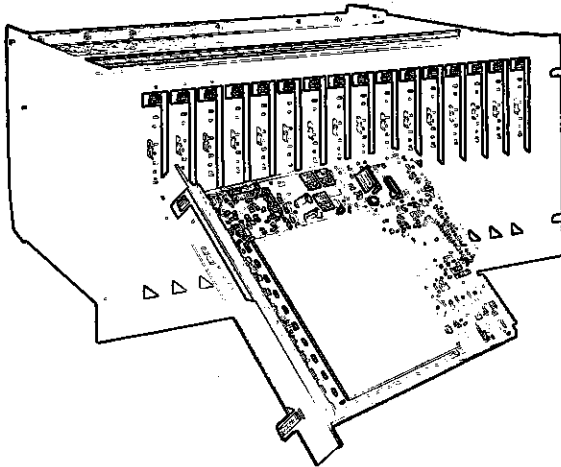
# ALM 3239 CS and ALM 1623

## *33,600 bps V.34 modem Card Nest*

- Full-duplex operation up to 33,600 bps
- Software definable for easy upgrades
- Auto/manual password security
- Auto-recovery for dial and leased lines
- V.42/V.42bis and MNP\* Classes 1-5
- Non-interruptive network management
- 16 modems per ALM 1623 card nest
- Can daisy-chain 5 card nests in a 6-foot rack
- Can intermix analog and digital products in same card nest (outside USA only)
- Optional personal controller available

# ALM 3239 CS and ALM 1623

## *33,600 bps V.34 Modem and Card Nest*



To succeed in today's highly competitive business environment, traveling executives, salespeople, and telecommuters demand immediate access to corporate data and e-mail services. V.34 modems that can transmit 33,600 bits per second (bps) provide high-speed access to these services over readily available dial-up telephone lines. And when you compare V.34 modems, you will find that the clear choice for performance, reliability and features is a Racal network-managed V.34 modem. We have one of the most advanced network management systems available, a 3-mode security system, and one of the most feature-packed, high-density V.34 modems on the market - the ALM 3239 CS.

The versatile ALM 3239 CS modem can operate over dial-up lines at speeds from 300 to 33,600 bps and over leased lines (2- or 4-wire) from 1,200 to 33,600 bps. It supports DTE speeds up to 115,200 bps, allowing superior throughput when combined with V.42bis or MNP Class 5 data compression. It comes standard with automatic dialing and answering, automatic recovery from failed leased lines (without termination of the dial connection), V.13 half-duplex emulation, and remote unit control. In addition, V.42 error correction ensures that your data arrives at its destination error-free.

### **Space-Saving, High-Density Design**

Designed for central site locations, the space-saving ALM 3239 CS allows you to install up to 16 modems in a single ALM 1623 high-density card nest. You can daisy-chain up to five card nests in a standard 6-foot high rack. This allows you to control up to 80 installed modems through a single control port.

Each modem can be controlled independently using a VT terminal, the CMS™ 400 network management system, or an optional hand-held personal controller. Eight LED indicators on the modem give you constant status information.

The optional personal controller is a portable version of the stand-alone ALM 3239 front panel. With this device, you can directly plug into and change the settings of any ALM 3239 CS in the rack.

The ALM 1623 card nest also can house a wide variety of Racal-Datacom communications products, so you can intermix any combination of leased line, PSTN, ISDN, and baseband access devices in the same card nest. When using a combination of ISDN or baseband access devices, up to eight ALM modems can be installed and monitored.

### **Software Definable**

The ALM 3239 CS modem can be reprogrammed with instructions for new functionality. This reprogramming can be done through either the local RS-232 port or the telephone interface, so upgrading your modem is as easy as a phone call. This eliminates the time-consuming task of exchanging old and new hardware.

### **Non-Interruptive Network Management**

The state-of-the-art CMS 400 network management system lets you manage more than 32,000 modems - located anywhere in the world - from a single location. The CMS 400 system provides real-time device monitoring, alarm gathering, advanced testing procedures, and statistical reports on network operation.

The CMS 400 system features an icon-driven Microsoft® Windows™ and X-Windows/Motif™ human interface along with multiuser functionality. Extensive automation provides auto-recovery of most managed devices and scripted execution of most functions. You can schedule activities by time of day or triggered by a specific event. CMS is compatible with networks using Ethernet or Token Ring, as well as computer environments using MS-DOS®/Windows® and UNIX®.

### **Auto-Recovery for Dial and Leased Lines**

The ALM 3239 CS provides an Auto-Recovery feature that operates in both dial and leased line applications to restore communications. If you lose a dial-line connection, the modem automatically redials the call. If you lose a leased line connection, the modem automatically places a dial-line call. It then periodically monitors the condition of the leased lines (without terminating dial communications) and automatically switches communications back when they are restored.

### Multistandard & Worldwide Compatibility

The ALM 3239 CS offers worldwide and multistandard high-speed compatibility, based on its compliance with the V.34, V.32bis and V.32 recommendations. In addition, its compliance with a wide array of lower-speed standards lets your system migrate cost-effectively to the higher speeds.

### AT Command Set and V.25bis Compatible Autodialing

When the AT command set (Hayes®) autodialer is selected, the ALM 3239 CS emulates a Hayes modem, allowing it to interface with computers running communications software based on the Hayes "AT" command set. When set for V.25bis autodialing, the modem uses serial automatic calling to establish dial-line connections in both synchronous and asynchronous applications.

### V.42bis and MNP Class 5 Data Compression

For maximum data throughput on an asynchronous transmission link, the ALM 3239 CS offers both V.42bis and MNP Class 5 data compression. The V.42bis method provides up to 4 to 1 compression, while MNP Class 5 provides up to 2 to 1 compression. With data compression, your DTEs can transmit at their maximum speeds, allowing you to significantly reduce your line costs. The

type of data compression used depends on the error-correction level negotiated - V.42bis is used with LAP-M; MNP Class 5 is used with MNP Classes 2-4.

### V.54 Diagnostics

A full set of ITU-T V.54 diagnostic tests enables you to isolate the source of network faults quickly. Available tests include analog loopback, digital loopback, remote digital loopback, self-tests, and VF level measurements.

### V.13 Half-Duplex Emulation

You can configure the ALM 3239 CS for ITU-T V.13 half-duplex emulation in both point-to-point and multidrop networks. This feature allows 33,600 bps transmission in a half-duplex point-to-point network without having to reprogram the network. This feature also is designed for applications that require control of a remote Data Carrier Detect (DCD) signal by the local Request-to-Send (RTS) signal (such as dial backup of multidrop networks).

### Bell 208B Auto-Detect

This feature allows the modem to automatically detect during the handshake, whether the calling modem is V.32/ V.32bis/V.34 or Bell 208B. The

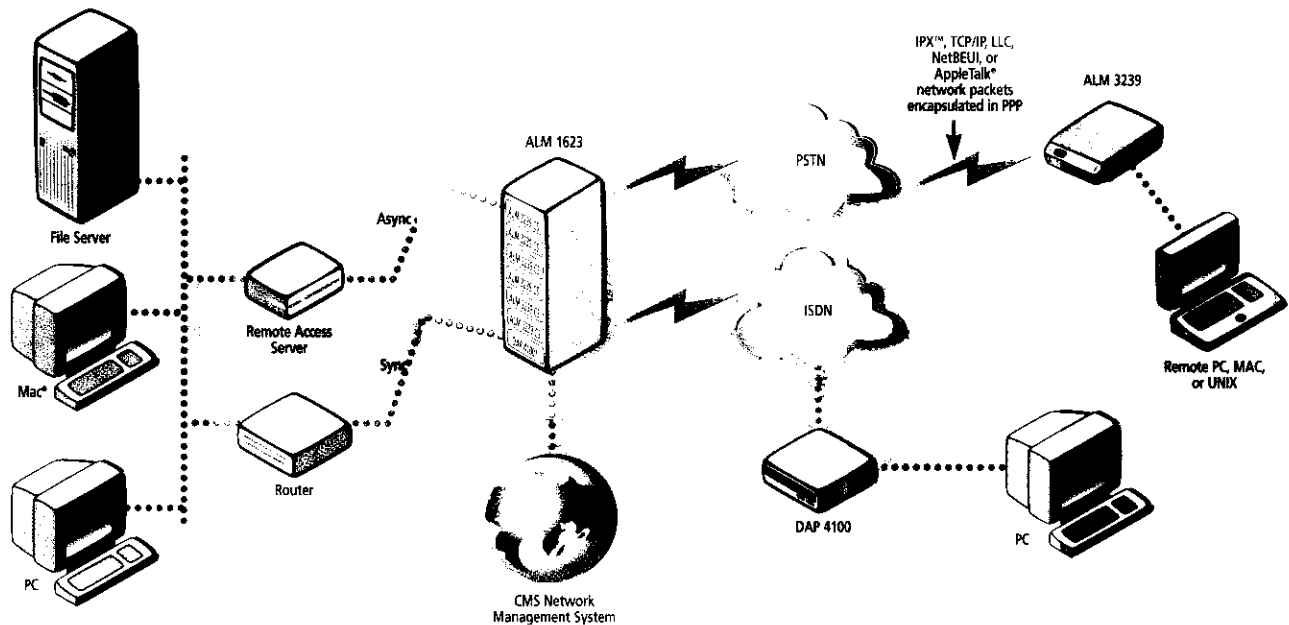
modems connect appropriately after the answering modem determines the type of calling modem. This feature allows you to configure the host CPU or front end for half-duplex synchronous operation.

### Automatic and Manual Password Security

The ALM 3239 CS modem has both automatic and manual modes of password security to prevent unauthorized access.

With automatic password security, each time the modem receives a call, it performs a security handshake with the calling modem. During this handshake, the answering modem permits the connection only if the password it receives matches its own. Users do not have to enter a password since both modems have been configured to use the same one. You can use automatic password security in both synchronous and asynchronous applications.

With manual password security, remote users attempting to connect to the modem are required to enter a password. Incoming calls are accepted only if the password is valid. This feature is compatible with any type of modem (V.32, V.22bis, Bell 212, etc.). Manual-response password protection is available in Hayes mode only.



Typical Remote LAN Access Application with ALM 3239 Standalone and Central Site Models

# ALM 3239 CS and ALM 1623

## *technical specifications*

<b>Line Requirements</b>	Operates full duplex over 2-wire dial lines or full duplex over 2-wire or 4-wire unconditioned leased lines	
<b>Line Speeds</b>	Synchronous	33,600, 28,800, 26,400, 24,000, 21,600, 19,200, 16,800, 14,400, 12,000, 9,600, 7,200, 4,800, 2,400, and 1,200 bps
	Asynchronous	33,600, 28,800, 21,600, 19,200, 16,800, 14,400, 12,000, 9,600, 7,200, 4,800, 2,400, 1,200, 300, and 1,200/75 bps; 9-, 10-, or 11-bit code
<b>DTE Speeds</b>	Selectable from 75 to 115,200 bps	
<b>Modulation Technique</b>	Quadrature Amplitude Modulation (QAM) at 33,600, 28,800, 26,400, 24,000, 21,600, 19,200, 16,800, 14,400, 12,000, 9,600, 7,200, 4,800, and 2,400 bps (multidimensional trellis coded)	
	PSK at 4,800 bps; full or half-duplex (Bell 208)	
	QAM at 14,400, 12,000, 9,600, 7,200, and 4,800 bps (trellis coded at 14,400, 12,000, and 7,200 bps; trellis coded or noncoded at 9,600; and noncoded at 4,800 bps)	
	QAM at 2,400 bps; bandsplit, full duplex	
	DPSK at 1,200 bps; bandsplit, full duplex	
<b>Standards Supported</b>	V.34, V.33, V.32bis, V.32, V.23, V.22bis, V.22, V.21, Bell 208, Bell 212A, and Bell 103	
<b>Channel Separation</b>	Echo cancellation in V.34 and V.32/V.32bis	
<b>Digital Interface</b>	EIA RS-232E, ITU-T V.24/V.28	
<b>Dial Line Interface</b>	Dial-up RJ-45 or RJ-11 modular connector with A/A1 and MI/MIC Control	
<b>Leased Line Interface</b>	JM-8 modular connector	
<b>Transmit Level</b>	Dial: complies with local requirements; Leased line: 0 to -15 dBm	
<b>Carrier Detect Threshold</b>	Dial-Up Line	Leased Line
	-51, -41, and -34 dBm, selectable	-26, -33, and -43 dBm, selectable
<b>Power Requirements</b>	AC Input	DC Input
	104 to 132 VAC, 47 to 63 Hz 178 to 264 VAC, 47.5 to 52.5 Hz	-48 VDC (-60 to -36 volts): outside North America only
<b>Operating Temperature</b>	32° to 122° F (0° to 40° C) ambient	
<b>Storage Temperature</b>	-4° to 158° F (-20° to 70° C)	
<b>Relative Humidity</b>	5 to 95%, noncondensing	
<b>Physical Specifications - Card Nest</b>	Height	8.75" (22.2 cm)
	Width	19.0" (48.3 cm); 21.0" (53.3 cm) with mounting flanges
	Depth	13.75" (34.9 cm)
	Weight	41.7 lbs (18.9 kg) with two power supplies
<b>Compliance/Approvals</b>	UL, FCC Parts 15A and 68; CSA, CDOC; CE-approved	
	Complies with 89/336/EEC amended by 92/31/EEC and 72/23/EEC	

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**Racal Data Group** Access to multimedia information networks

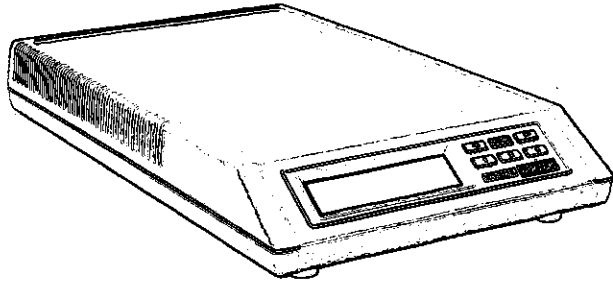
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- Full-duplex operation up to 28,800 bps
- Supports DTE speeds up to 115,200 bps
- Software definable for easy upgrades
- Auto/manual password security
- Auto-recovery for dial and leased lines
- AT and V.25bis autodialing
- V.42/V.42bis and MNP Class 1-5
- Non-interruptive network management
- V.13 half-duplex emulation
- Remote unit control
- Bell 208 auto-detect

### The Clear Choice for V.34 Performance

To succeed in today's highly competitive business environment, travelling executives, salespeople, and telecommuters demand immediate access to corporate data and e-mail services. V.34 modems provide high-speed access to these services over readily available dial-up telephone lines. And when you compare V.34 modems, you will find that the clear choice for performance, reliability, and features is a Racal network-managed V.34 modem. We have one of the most advanced network management systems available, a 3-mode security system, and one of the most feature-packed V.34 modems on the market — the ALM 3239 SD.

The versatile ALM 3239 SD modem can operate over dial-up lines at speeds from 300 to 28,800 bps and over leased lines (2- or 4-wire) from 1200 to 28,800 bps. It supports DTE speeds up to 115,200 bps — allowing superior throughput when combined with V.42bis or MNP Class 5 data compression. It comes standard with automatic dialing and answering, automatic recovery from failed leased lines (without termination of the dial connection), V.13 half-duplex emulation, and remote unit control. In addition, V.42 error correction ensures that your data arrives at its destination error-free.

### Software Definable

The ALM 3239 SD modem uses flash memory to store program code, allowing it to be reprogrammed with instructions for new functionality. This reprogramming can be done through either the local RS-232 port or the telephone interface, so upgrading your modem is as easy as a phone call. This eliminates the time-consuming task of exchanging old and new hardware.

### Easy to Use

The ALM 3239 SD provides a 32-character menu-driven front panel display that makes monitoring, configuring, and testing your modem quick and easy. Twelve preset configurations allow you to quickly customize the modem for your particular application. And with remote unit control, you can configure, monitor, and test a remote ALM 3239 SD from the local unit's front panel.

### Non-Interruptive Network Management

The ALM 3239 SD modem can be monitored, diagnosed, controlled, and configured non-interruptively through the CMS 400 network management system.

The state-of-the-art CMS 400 lets you manage over 32,000 modems — located anywhere in the world — from a single location. CMS 400 provides real-time device monitoring, alarm gathering, advanced testing procedures, and statistical reports on network operation.

CMS features an icon-driven Microsoft® Windows™ and X-Windows/Motif human interface along with multi-user functionality. Extensive automation provides auto-recovery of most managed devices and scripted execution of most functions. Activities can be scheduled by time of day or triggered by a specific event. CMS is compatible with networks using Ethernet or Token Ring, as well as computer environments using MS-DOS®, OS/2®, and UNIX®.

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### **Auto-Recovery for Dial and Leased Lines**

The ALM 3239 SD provides an Auto-Recovery feature that operates in both dial and leased line applications. If the line is disconnected unintentionally in dial line applications, the modem automatically re-dials the call to restore communication. This feature emulates the reliability of a leased line connection.

If the line deteriorates excessively in leased line applications, the modem automatically places a dial line call to restore communication. It then periodically monitors the condition of the leased lines (without terminating dial communications) and automatically switches communications back when they are restored.

### **AT Command Set and V.25bis Compatible Autodialing**

When the AT command set (Hayes®) autodialer is selected, the ALM 3239 SD emulates a Hayes modem, allowing it to interface with computers running communications software based on the Hayes "AT" command set. When set for V.25bis autodialing, the modem uses serial automatic calling to establish dial line connections in both synchronous and asynchronous applications.

### **Multistandard & Worldwide Compatibility**

The ALM 3239 SD offers worldwide and multistandard high-speed compatibility, based on its compliance with the V.32, V.32bis, and V.34 recommendations. In addition, its compliance with a wide array of lower speed standards lets your system migrate cost-effectively to the higher speeds. The following modulation schemes are supported:

- V.34 at 28,800, 26,400, 24,000, 21,600, 19,200, 16,800, 14,400, 12,000, 9600, 7200, 4800, and 2400 bps
- V.33 at 14,400 and 12,000 bps
- V.32bis at 14,400, 12,000, 9600, 7200, and 4800 bps
- V.32 at 9600 and 4800 bps
- Extended V.32 at 14,400 and 12,000 bps
- V.23 at 1200/75 bps (async only)
- V.22bis at 2400 bps
- V.22 at 1200 and 600 bps
- V.21 at 0-300 bps (async only)
- Bell 208 at 4800 bps
- Bell 212A at 1200 bps
- Bell 103 at 0-300 bps (async only)

### **Supports DTE Speeds to 115,200 bps**

The ALM 3239 SD can communicate with the DTE at speeds from 75 bps to 115,200 bps. This allows you to achieve maximum data throughput when using the modem's data compression feature.

### **V.42bis and MNP Class 5 Data Compression**

For maximum data throughput on an asynchronous transmission link, the ALM 3239 SD offers both V.42bis and MNP Class 5 data compression. The V.42bis method provides up to 4 to 1 compression, while MNP Class 5 provides up to 2 to 1 compression. With data compression, your DTEs can transmit at their maximum speeds, allowing you to significantly reduce your line costs. The type of data compression used depends on the error correction level negotiated — V.42bis is used with LAP-M; MNP Class 5 is used with MNP Classes 2-4.

### **V.54 Diagnostics**

A full set of ITU-T V.54 diagnostic tests enables you to quickly isolate the source of network faults. Available tests include analog loopback, digital loopback, remote digital loopback, self-tests, and VF level measurements. The modem also contains an X-Y eye pattern generator that lets you visually monitor the received analog signal on a standard oscilloscope.

### **V.13 Half-Duplex Emulation**

You can configure the ALM 3239 SD for ITU-T V.13 half-duplex emulation in both point-to-point and multidrop networks. This feature allows 28,800 bps transmission in a half-duplex point-to-point network without having to reprogram the network. This feature is also designed for applications that require control of a remote Data Carrier Detect (DCD) signal by the local Request-to-Send (RTS) signal (such as dial backup of multidrop networks).

### **Bell 208B Auto-Detect**

This feature allows the modem to automatically detect, during the handshake, whether the calling modem is V.32/V.32bis/V.34 or Bell 208B. The modems connect appropriately after the answering modem determines the type of calling modem. Bell 208B modems use a 2-wire, half-duplex technique providing synchronous data transfer at 4800 bps. V.32/V.32bis/V.34 modems use a 2-wire, full-duplex modulation with V.13 half-duplex simulation. This feature allows the host CPU or front end to be configured for half-duplex synchronous operation.

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## Automatic and Manual Password Security

It's a fact. High tech thievery happens frequently. Hackers break into networks and steal or corrupt valuable data. The losses can be devastating. Today, it's essential that you have control over network access.

The ALM 3239 SD modem offer both automatic and manual modes of password security to prevent unauthorized user access.

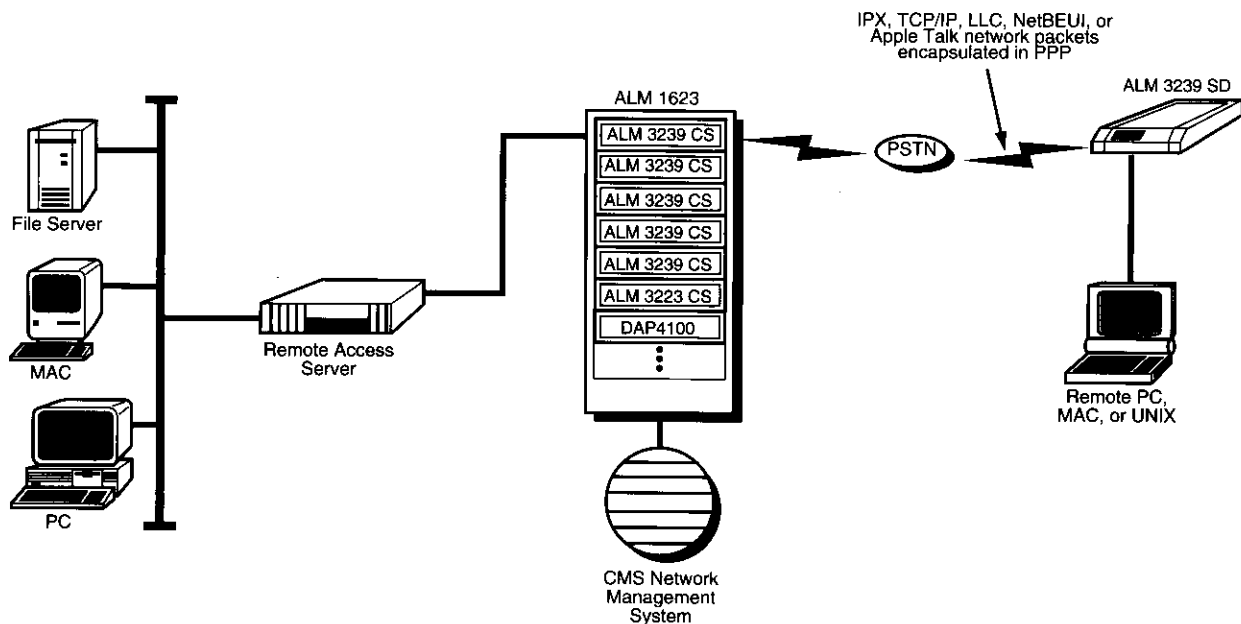
With automatic password security, each time the modem receives a call, it performs a security handshake with the calling modem. Users do not have to enter a password since both modems have been configured to use the same password in the security handshake. During this handshake, the

calling modem sends its preprogrammed password through the auxiliary channel to the answering modem.

The answering modem permits the connection only if the password it receives matches its own preprogrammed password. Because the password is included in the handshake, the user doesn't have to perform any additional steps when placing the call. You can use automatic password security in both synchronous and asynchronous applications.

With manual password security, remote users attempting to connect to the ALM 3239 SD are required to enter a password. Incoming calls are accepted only if the password is valid. This feature is compatible with any type of modem (V.32, V.22bis, Bell 212, etc.). Manual-response password protection is available in Hayes mode only.

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Typical Remote LAN Access Application with ALM 3239 Standalone and Central Site Models

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## Technical Specifications

<b>Line Requirements</b>	Operates full-duplex over 2-wire dial lines or full-duplex over 2-wire or 4-wire unconditioned leased lines	
<b>Line Speeds</b>	Synchronous	28,800, 26,400, 24,000, 21,600, 19,200, 16,800, 14,400, 12,000, 9600, 7200, 4800, 2400, and 1200 bps
	Asynchronous	28,800, 21,600, 19,200, 16,800, 14,400, 12,000, 9600, 7200, 4800, 2400, 1200, 300, and 1200/75 bps; 9, 10, or 11 bit code
<b>DTE Speeds</b>	Selectable from 300 to 115,200 bps	
<b>Modulation Technique</b>	Quadrature Amplitude Modulation (QAM) at 28,800, 26,400, 24,000, 21,600, 19,200, 16,800, 14,400, 12,000, 9600, 7200, 4800, and 2400 bps (multi-dimensional trellis coded)	
	QAM at 14,400, 12,000, 9600, 7200, and 4800 bps (trellis coded at 14,400 and 12,000 bps; trellis coded or non-coded at 9600 and 7200; and non-coded at 4800 bps)	
	QAM at 2400 bps; bandsplit, full-duplex	
	DPSK at 1200 bps; bandsplit, full-duplex	
	FSK at 1200/75 and 300 bps; bandsplit, full duplex	
<b>Standards Supported</b>	V.34, V.33, V.32bis, V.32, V.23, V.22bis, V.22, V.21, Bell 208, Bell 212A, and Bell 103	
<b>Channel Separation</b>	Echo cancellation in V.34 and V.32/V.32bis	
<b>Digital Interface</b>	EIA RS-232E, ITU-T V.24/V.28	
<b>Dial Line Interface</b>	Dial-up RJ-45 or RJ-11 modular connector with A/A1 and MI/MIC Control	
<b>Leased Line Interface</b>	RJ-45 modular connector	
<b>Transmit Level</b>	Permissive: -10 dBm; Programmable: 0 to -12 dBm; Leased line: 0-15 dBm	
	<b>Dial-Up Line</b>	<b>Leased Line</b>
<b>Carrier Detect Threshold</b>	-51, -41, and -34 dBm, selectable	-26, -33, and -43 dBm, selectable
<b>Power Requirements</b>	Domestic: 104 to 132 VAC, 60 Hz $\pm 5\%$ International: 178 to 264 VAC, 50 Hz $\pm 5\%$	
<b>Operating Temperature</b>	32° to 122° F (0° to 40° C) ambient	
<b>Storage Temperature</b>	-4° to 158° F (-20° to 70° C)	
<b>Relative Humidity</b>	5 to 95%, non-condensing	
<b>Physical Specifications</b>	Height	1.5" (3.81 cm)
	Width	5.75" (14.6 cm)
	Depth	10.25" (26.04 cm)
	Weight	1.5 lbs
<b>Compliance/Approvals</b>	U. S./Canada	FCC Parts 15A and 68, CSA, CDOC, and UL approved
	International	UK, Germany, France, Holland, Belgium, S. America, Switzerland, and various Asian territories

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