IDEA Courier 9000 Series Display System

In this report:

Product Summary

Editor's Note
IDEA Courier has not announced any new products or product enhancements since the last issue of this report.

Description
IDEA markets 3270-compatible controllers, displays, and printers. Some of these products implement IDEA's proprietary protocols; others are IBM coax-compatible. IDEA also markets a line of Advanced Function Terminals, which combine both 3270 communications and DOS application processing capabilities.

Strengths
IDEA's IBM coax-compatible controllers support many of the capabilities of IBM's 3174 controllers. The total hardware and software costs for IDEA's products, however, can be up to $4,500 less than those of comparable IBM models. Some of IDEA's proprietary controllers are priced even more competitively. IDEA's displays and printers incorporate features found on IBM products that sell for hundreds of dollars more.

Limitations
At present, IDEA's controllers support a maximum of only two synchronous hosts, while IBM's 3174 can accommodate up to three synchronous host connections.

Competition
IBM, Memorex Telex, AT&T, Lee Data, and others.

Vendor
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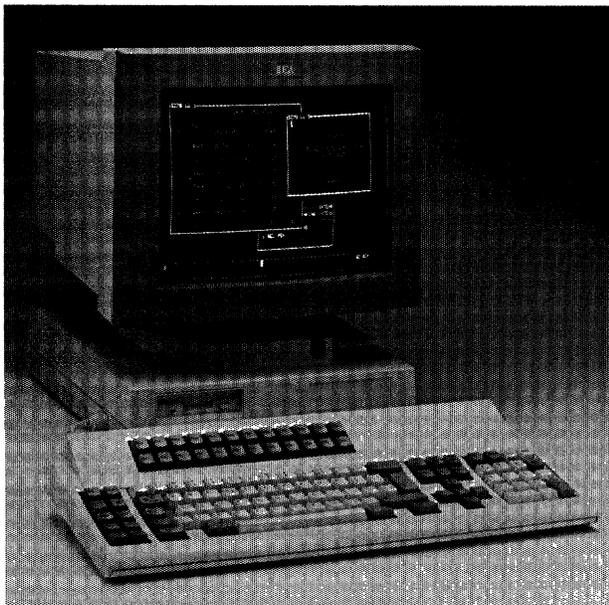6889 Rexwood Road
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Price
Controller prices range from $2,740 to $13,330. Display prices range from $975 to $1,895. Printers cost from $725 to $9,500.

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Analysis

Product Strategy

IDEA is a leader in the marketing of communications products for IBM 3270 and System/3X environments. IDEA's 9000 Series product line includes a group of 3270-compatible communications controllers, monochrome and color displays, and dot matrix and laser printers that use IDEA's proprietary coax protocol. Some of these displays support multitasking windows. The IDEA 9000 Series product family also features a group of communications controllers, monochrome and color displays, and printers that conform to IBM's coax protocol.

IDEA's controllers provide access to dual synchronous hosts and multiple asynchronous hosts. Additionally, some of IDEA's IBM coax-compatible controllers support token-ring connections.

IDEA's 9268C Advanced Function Terminal (AFT) supports multiple 3270 sessions, VT320 emulation, DOS applications, and notepads—with windowing and session-to-session copying capability.

Advanced Function Terminals (AFTs) are also part of IDEA's 9000 Series product line. (Variations of this type of product are often referred to as *processing terminals* or *diskless workstations* by other vendors.) These workstations combine the graphics and communications capability of a 3270 display station with the desktop processing power of a personal computer. They provide capabilities such as five concurrent 3270 sessions with windowing, MS-DOS application processing, Ethernet and token-ring LAN connectivity, VT320 emulation, and support for application program interfaces.

Competitive Position

The 3270 terminal market is far from dead. Studies by various market research firms have put the installed base of 3270-type terminals at well over 3 million units. International Data Corporation (IDC) predicted increases in annual U.S. shipments from about 849,000 units in 1988 to over 940,000 units by 1992. With the proliferation of local area networks, however, display terminals must share the spotlight with the diskless workstation, an economical alternative to the PC for 3270 emulation.

Display terminal vendors have kept their products competitive with PCs and diskless workstations by adding aesthetic and functional features to their displays. Terminals now offer smaller footprints, glare-free screens, easy-to-use keyboards, tilt/swivel monitors, and greater resolution; support for display-attached printers, light pens, and bar code readers; and productivity features such as multiple logical units' capability, which provides access to multiple concurrent sessions, and record/play/pause capability, which enables users to store frequently used phrases.

The 3270-compatible market is the largest subset of the alphanumeric display market. Approximately half of the installed base of displays are IBM terminals; the rest are 3270-compatible models from independent manufacturers. The leading competitors in this market are Memorex Telex, AT&T, IDEA, and Lee Data. According to research performed by Dataquest, Memorex Telex is the major vendor after IBM, controlling about 29 percent of the display market. AT&T, IDEA, and Lee Data follow with about 8, 5, and 2 percent of the market respectively.

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In the early years of the 3270 market, vendors found it relatively easy to compete with IBM by offering 3270-compatible displays and controllers at a lower price. Memorex Telex and IDEA are still achieving a high degree of success with this strategy. More recently, however, vendors began adding enhanced capabilities such as access to both synchronous and asynchronous hosts and windowing capabilities.

Determined to maintain its lead in this market, IBM countered by adding more advanced features to its own product line. In 1986, IBM introduced the 3174 communications controller—the first IBM controller to support asynchronous hosts and a token-ring connection. More recently, in Summer 1989, IBM enhanced the 3174 controller, giving it a more powerful processor, 6M bytes of memory capacity, and new microcode to support up to three synchronous hosts. In 1989, IBM also released the new InfoWindow 3471 and 3472 families of 3270-compatible display terminals, which provide higher resolution and greater processing speed than previous IBM displays. Model 3742-GC, the most advanced display, supports multitasking windows: up to five concurrent 3270 sessions and a graphics session with vector-to-raster conversion. This display also supports a mouse.

The functionality war continues to intensify. IDEA offers displays with productivity features and attachment options that make them desirable alternatives to IBM's displays. Controllers marketed by Memorex Telex, AT&T, and Lee Data exceed the capabilities of IBM's 3174 controller by supporting up to four synchronous host connections and concurrent access to multiple asynchronous (in addition to multiple synchronous) sessions for attached displays.

Decision Points

IDEA has a strong position in the 3270 market, with 3270-compatible displays and controllers that offer competitive price/performance.

Selling for $10,800, IDEA's 9474-401L controller provides 18 standard coax ports and one synchronous host port. Controller software comes at no extra charge. Through optional adapters, the 9474-401L can accommodate up to 32 synchronous peripherals, 24 asynchronous devices, and a

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Company Background
IDEAssociates was founded in 1982 by Gautam Gupta, David Page, and David Hunter to provide local, remote, and gateway communications solutions for linking IBM-compatible PCs and Macintosh computers to IBM midrange systems. From the beginning, annual revenues grew at a compounded rate of 90 percent per year.

In November 1988, IDE-Associates purchased Alcatel Information Systems (formerly ITT Courier), forming two new entities: IDEA Courier and IDEA Servcom. With headquarters in Tempe, AZ, IDEA now provides IBM 3270-compatible products from Courier as well as the System/3X and AS/400 product line of IDEAssociates. IDEA Servcom provides worldwide service and telephone support to users of IDEA Courier products.

IDEA Courier now has over 1,500 employees, and has achieved annual sales of over $250 million.

second synchronous host connection. IBM's equivalent, the 3174-11L controller, comes with only four standard coax ports and a single synchronous host connection. Although it supports the same maximum number of synchronous and asynchronous devices and up to three synchronous hosts, the 3174-11L has an entry level price of $14,260. The cost of IBM's Configuration Support B Microcode adds another $1,100 to the price tag, making the IBM product over $4,500 more expensive. IDEA's 9292 2F Color Display provides IBM 3192 F compatibility with extras such as 6000 keystroke storage, a calculator with export capability, and an enhanced setup mode with password protection. IDEA's 9292 2F display is priced at $1,575, while IBM's 3192 F display costs from $1,765 to $1,915.

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IDEA, however, must also vie with Memorex Telex, AT&T, and Lee Data, all of which offer communications controllers that support advanced multihost and multisession capabilities. Memorex Telex's 1174 Network Controller, AT&T's 6544 Multifunction Communication Controller, and Lee Data's new Datastar 5000 System all support up to four synchronous hosts. These products also provide access to five concurrent synchronous and/or asynchronous sessions, in any combination, for attached displays.

Characteristics

Models: *IDEA Proprietary Products*—System 9000 Controllers, models 9420, 9422, 9425, 9440, and 9442; 9210 and 9212 Basic Function Monochrome Displays; 9216 Basic Function Color Display; 9230 and 9232 Extended Function Monochrome MLU Displays; 9236 Extended Function Color MLU Display; 9302, 9303, 9304, and 9306 Matrix Printers; and 9375 Laser Printer.
IDEA Advanced Function Terminals—Models 9262C, 9264C, and 9268C.
    IDEA IBM Coax-Compatible Products—9474-400 Series Controllers, models 401L, 401R, 402R, 403R, 441R, 442R, 443R 451R, 452R, 453R, 481R, 482R, and 483R; 9291 A+ and 9291 G+ Monochrome Displays; 9291 2DG, 9291 2DA, and 9291 2B/W Monochrome Displays; 9292 2C Color Display; 9292 2F Color Display; 9292 2DG and 9292 2DA Monochrome Displays; 9292C+ Color Display; 9307 and 9324 Matrix Printers; 9345 and 9347 Shuttle Matrix Line Printers; and 9376 Laser Printer.

Date Announced: Proprietary Products—April 1984; Advanced Function Terminals—January 1988; IBM Coax-Compatible Products—July 1987.

Date First Installed: Proprietary Products—April 1984; Advanced Function Terminals—March 1988. IBM Coax-Compatible Products—July 1987.

Number Installed to Date: Over 600,000 IDEA terminals are installed worldwide.

Serviced by: IDEA Servcom.

System Components

IDEA's 9000 Series product line includes the System 9000 family—a collection of 3270-compatible communications controllers, color and monochrome display terminals, and laser and dot matrix printers that implement IDEA's proprietary protocols. IDEA also markets a group of IBM coax-compatible controllers, displays, and printers. A set of advanced function terminals supporting both 3270 communications and MS-DOS application processing makes up a third part of the product line.

IDEA Proprietary Products

System 9000 Controllers
Five models make up the System 9000 family of controllers: the 9420, 9422, and 9425 remote controllers and the 9440 and 9442 local controllers. Models 9422 and 9442 are redundant controllers designed to provide system backup. The 9420, 9422, 9440, and 9442 controllers start with an 11-port configuration; the 9425 is offered in 4-port and 11-port versions. These controllers are upgradable in increments of seven ports to a system that supports 32 physical devices.
    Incremental upgrades are device adapters installed directly in the controller or in External Terminal Multiplexers (ETMs) located up to 5,000 feet from the controller. The ETM is connected to the controller by a single coax cable. This increases the maximum separation between a device and its controller to 10,000 feet. The ETM supports eight System 9000 devices, which may be located up to an additional 5,000 feet away.
    The 94601 Intelligent Device Adapter permits connection of four IBM DFT or CUT displays. An Asynchronous Device Adapter is also available for connection of up to eight asynchronous terminals and hosts via direct connect or dial-up with modems. Any combination of workstations with Digital VT terminal emulation and asynchronous hosts communicating at speeds ranging from 50 bps to 19.2K bps is supported.
    The System 9000 controllers are functionally compatible with similarly configured IBM 3270 Information Display Systems. They support SNA/SDLC and 3270 BSC, as well as the X.25 packet-switching protocol. The System 9000 controllers accommodate up to two synchronous hosts and multiple asynchronous hosts. Multiple logical unit support provides concurrent access to up to four 3270 sessions and one asynchronous session for IDEA's Extended Function MLU Displays. Extended datastream (EDS) support expands programmer options to include the use of extended highlighting and extended color; and programmed symbol set (PSS)-based graphics aids in data entry and office automation screen design. Menu-driven customization significantly reduces network customization time. Diagnostic capabilities supported include self-testing, error logging, status panel indicators, attribute reveal, response time monitoring, and line/channel capturing.
    For all models, System 9000 controller software is provided at no extra charge.

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The remote controllers support RS-232-C connectivity and combine interface options and protocols of 1200 to 19.2K bps in a BSC environment and 1200 to 64K bps in an SNA/SDLC environment. Point-to-point, multipoint, and switched connections via modems or other data circuit terminating equipment are supported.

The 9440 and 9442 local controllers interface to IBM System/370, 308X, 3090, 4361, 4381, and compatible mainframes. Channel attachment of the local controller is made to a byte multiplexer, block multiplexer, or selector channel over standard Bus and Tag interface cables.

System 9000 Displays

IDEA 9210 (Green) and 9212 (Amber) Basic Function Monochrome Displays feature a 14-inch tilt and swivel monitor with high-resolution presentation and a slim-line designed 92-, 110-, or 122-key keyboard. Standard features include support for dual logical units; run-time diagnostics capability; enhanced setup menus; extended datastream support; variable field underline; row and column indicators; and a programmable security lock. Optionally, either model can support a display-attached printer and a selector light pen.

IDEA 9216 Basic Function Color Display features a 14-inch tilt and swivel monitor with seven-color, high-resolution presentation and a slim-line designed 92-, 110-, or 122-key keyboard. The display includes features such as dynamic color assignment; dual logical units; run-time diagnostics capability; an enhanced setup mode; extended datastream support; a programmable security lock; variable field underline; and row and column indicators. Optionally, this model can support a display-attached printer and a selector light pen.

IDEA Extended Function MLU Displays provide expanded workstation support. Models 9230 (monochrome green) and 9232 (monochrome amber) are IBM 3192 D-compatible terminals. Model 9236 is a seven-color display compatible with IBM's 3192 C terminal.

With MLU, the user has four 3270 sessions, one asynchronous session, and a notepad session available with a single keystroke. Segments of all six can be displayed on a single screen, allowing users to interact with any session while simultaneously monitoring the remaining sessions. In addition, the screen zooms to expand the interactive segment to full-screen presentation with a single keystroke. Information in one session can be copied to another session, and each session can be identified (personalized) when displaying segments of multiple sessions.

The Extended Function MLU Displays feature a 15-inch tilt and swivel monitor with high-resolution presentation and a slim-line designed 92, 110-, or 122-key keyboard. Operational features include extended datastream support; programmed symbol set support; run-time diagnostics capability; a reveal mode; an enhanced setup mode; extended highlighting; variable field underlining; and row and column indicators. The

monochrome displays provide four user-selectable screen sizes, while the color monitor allows a choice of two screen sizes. These displays also optionally support a selector light pen, display-attached printer, a bar code reader, and optical character reader.

System 9000 Printers

IDEA 9302 Matrix Printer supports draft-quality, bidirectional printing at 150 cps. Attached to one of IDEA's displays, it offers fast response screen copy capability, which enables the user to begin working on a new screen while the previous one is being printed.

IDEA 9303 Matrix Printer is a multifunction printer compatible with the IBM 3287 Models I and II. It offers draft-quality printing at 200 cps and NLQ printing at 55 cps. Programmed symbol set graphics is offered as an option.

IDEA 9304 Matrix Printer is compatible with the IBM 3268. It offers draft-quality printing at 400 cps and NLQ printing at 100 cps. The 9304 supports programmed symbol set graphics as an option.

IDEA 9306 Color Matrix Printer is a high-speed IBM 3287-2C equivalent offering four- and seven-color printing at 400 cps in draft mode and 100 cps in NLQ mode. The 9306 also offers single- or triple-plane programmed symbol set support as a standard feature.
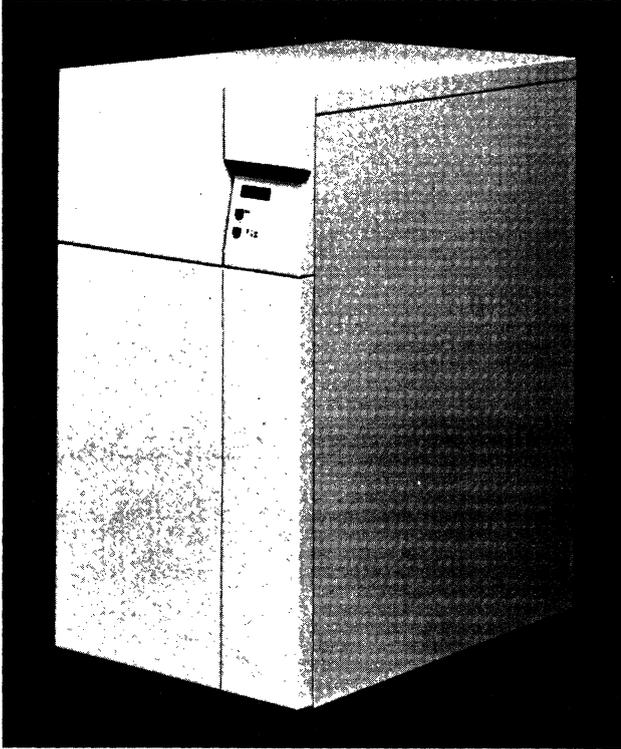
IDEA 9375 Laser Printer is a shared-resource page printer that produces text and high-resolution graphics at 15 pages per minute. The 9375 has both RS-232-C serial (300 to 19.2K bps) and Centronics parallel interfaces which allow connection to the 942X and 944X controllers via IDEA's 932X Non-Integrated Printer Controllers (NIPCs).

IDEA 926X Advanced Function Terminals
Advanced Function Terminals (AFT's) combine the graphics and communications capability of a 3270 workstation with the desktop processing capabilities of a PC. They can connect to IDEA 9474-Series 400 communications controllers, IBM 3174 and 3274 controllers, token-ring and Ethernet LANs, and asynchronous hosts.

Model 9262C is a graphics terminal supporting host application all-points-addressable (APA) graphics. This model includes a 3.5-inch diskette drive as standard equipment. Model 9264C supports the Entry Emulator High Level Language Application Program Interface (EEHLLAPI). With this interface, users can consolidate information from separate applications and customize end-user screens without having to modify host-resident programs. Model 9268C is a diskless (LAN) workstation with built-in 3270 networking support. IDEA offers multisession system software, a file transfer facility, and an application programming interface for this advanced function terminal.

Each AFT comes with a choice of a black and white monochrome monitor with 16 shades of gray, or a

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IDEA 9474-400 Series controllers are functionally equivalent to IBM 3174 controllers. These IDEA controllers are designed to support a variety of IBM 3270 coax-compatible devices at both the host and individual device level.

color monitor with a 16-color palette. Both monitor types include tilt/swivel capability and a screen resolution of 720 by 400 pixels in text mode.

Features shared by all Advanced Function Terminal models include support for up to five 3270 sessions; VT320 emulation; notepads; windowing capability that allows copying between sessions; four user-selectable screen sizes; and a hot key between 3270 sessions and DOS.

IDEA IBM Coax-Compatible Products
IDEA's 9474-400 Series controllers are IBM coax-compatible units designed to accommodate IDEA's family of IBM coax-compatible displays and printers (as well as other IBM coax-compatible products). These peripherals can also connect directly to IBM 3174, 3274, and 3276 controllers.

IDEA 9474-400 Series Controllers
One local controller and 12 remote controllers make up the 9474-400 series. These controllers require no modifications to mainframe hardware, system software, or application software when used in place of an IBM controller. Controller software is supplied at no extra charge, except for token-ring configurations.

IDEA 9474-400 Series controllers offer the following features:

- Support for dual IBM synchronous hosts (System/370, 43XX, 9370, or 30XX) and multiple asynchronous hosts

- Support for up to four synchronous sessions and one asynchronous session

- Ability to connect to any 3270-type displays or printers that are IBM Category A coax-compatible, including IDEA's IBM coax-compatible displays and printers

- Ability to accommodate IDEA's Advanced Function Terminals and IBM-compatible PCs equipped with 3270 emulation boards

- PC file transfer capability in MVS/TSO, VM/CMS, and CICS environments

- Automatic session recovery (for SDLC configurations)

- APL/text control

- A token-ring interface (some models)

- Customization for any 3270 keyboard layout

- Intelligent printer datastream support

- Pacing of inbound message traffic (SDLC)

- Structured field and attribute processing

IDEA 9474-401L Local Controller is compatible with the IBM 3174-1L and 11L. It offers 18 standard ports and is expandable to 32 coax ports with the addition of a coax device adapter. Additionally, the 9474-401L supports up to 24 asynchronous devices and a token-ring connection. This controller operates in SNA or non-SNA mode. Channel attachment is made to the byte multiplexer or block multiplexer with operation in either byte mode or burst mode.

IDEA 9474-401R Remote Controller is compatible with the IBM 3174-1R and 11R. The 9474-401R uses an RS-232-C or V.35 interface and operates in SNA/SDLC, SNA/X.25, or BSC mode. It offers 18 ports and is expandable to 32 ports with the addition of one coax device adapter. This controller also supports attachment of up to 24 ASCII devices.

IDEA 9474-402R Remote Controller is compatible with the IBM 3174-2R and 12R. This controller is equipped with an X.21 interface and operates in SNA/X.25 mode. Device support is the same as for the 9474-401R (up to 32 coax ports and 24 ASCII ports).

IDEA 9474-403R Remote Controller is compatible with the IBM 3174-3R and 13R. Model 9474-403R contains a token-ring interface and operates in SNA mode. Device support is the same as for 9474-401R.

IDEA 9474-441R, 442R, and 443R Remote Controllers have no IBM equivalents. Model 441R includes an RS-

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232-C or V.35 interface and operates in SNA/SDLC, SNA/X.25, or BSC mode. Model 442R, equipped with an X.21 interface, operates in SNA/SDLC or SNA/X.25 mode. Model 443R incorporates an IBM-compatible token-ring interface and operates in SNA mode only. All three controllers provide 9 standard coax ports and can optionally accommodate up to 32 coax ports and eight ASCII ports.

IDEA 9474-451R Remote Controller is compatible with IBM's 3174-51R and 61R models. Equipped with an RS-232-C or V.35 interface, this controller operates in SNA/SDLC, SNA/X.25, or BSC mode. It provides 9 standard coax ports and is expandable to 32 coax ports and eight asynchronous devices.

IDEA 9474-452R Remote Controller is compatible with the IBM 3174-52R and 62R models. Equipped with an X.21 interface, this controller operates in SNA/SDLC or SNA/X.25 mode. Device support is the same as for the 9474-451R.
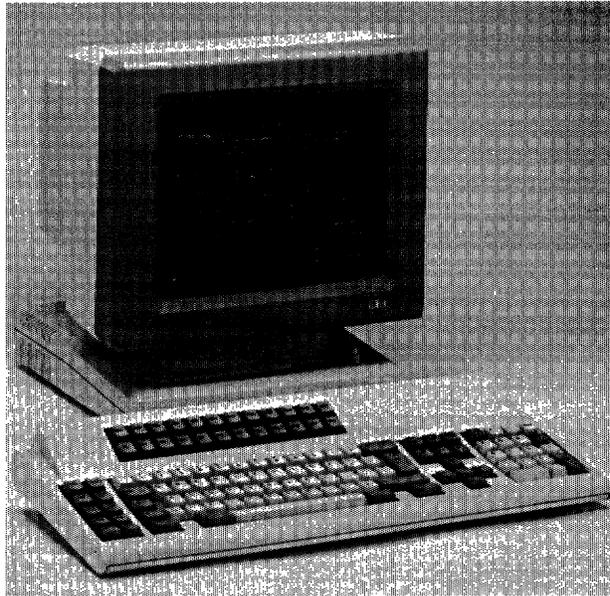
IDEA 9474-453R Remote Controller is compatible with the IBM 3174-53R and 63R models. It contains a token-ring interface and operates in SNA mode only. Device support is the same as for the 9474-451R.

IDEA 9474-481R Remote Controller is compatible with the IBM 3174-81R and 91R. Equipped with RS-232-C interface, this controller operates in SNA/SDLC, SNA/X.25, or BSC mode. The 9474-481R comes with four standard coax ports, although it is expandable to eight coax and two asynchronous ports. It also supports DFT and DSL devices.

IDEA 9474-482R Remote Controller is compatible with the IBM 3174-82R and 92R. Using an X.21 interface, this controller operates in SNA/X.25 mode only. Device support for the 9474-482R is the same as for the 9474-481R.

IDEA 9474-483R Remote Controller has no IBM equivalent. It operates in SNA mode with a token-ring interface, offering the same device support as does the 9494-481R.

The IDEA 9474-401L supports channel communications speeds of up to 1.25M bps. All remote controllers listed above support point-to-point or multipoint configurations. SNA/SDLC operation uses nonswitched facilities (half duplex or full duplex) at 1200 bps to 64K bps; SDLC switched configurations operate from 1200 to 9600 bps, and X.25 nonswitched and switched connections operate from 1200 to 19.2K bps. BSC operation uses nonswitched facilities (half duplex or full duplex) at speeds of 1200 to 19.2K bps (models 401R and 441R) or 9600 bps (models 451R and 481R). X.21 operation uses nonswitched facilities at speeds from 19.2K bps to 64K bps under SNA/SDLC or at 19.2K bps under SNA/X.25. Token-ring controllers operate at a speed of 4M bps.

The IDEA 9291 Monochrome Display is an IBM coax-compatible display comparable to the IBM 3191 model.

The IDEA 9499 Coax Multiplexer is a 3270 multiplexer that is compatible with IBM's 3299 model. The 9499 connects eight coax devices to 9474-400 Series and IBM 3174 controllers (except for 9474-48XR models). The 9499 supports a variety of Category A coax devices; it attaches to the controller with a single coax cable at a maximum length of 4,920 feet. Attachment of the IDEA 9499 Coax Multiplexer is designed for customer setup and does not require software or hardware modifications when attached to a 9474-400 Series Controller.

Asynchronous Communications Support, offered as an optional feature for all controllers, provides three modes of asynchronous communication: 3270 emulation for ASCII devices; ASCII emulation for 3270 devices; and ASCII device to ASCII host pass-through.

ASCII devices predefined by the IDEA 9474-400 Series controller software may be configured on-line without interrupting system operation. Additional ASCII devices can be defined using the off-line ASCII Definition Utility (ADU). In addition, there are hardware and software modules within the controller that perform the conversion between the ASCII data format used by the terminals and the 3270 mode datastream sent to and from the host.

IDEA IBM Coax-Compatible Displays

IDEA 9291 A+ and G+ Monochrome Displays are amber and green coax displays compatible with the IBM 3191 A and 3191 B models. These displays include a 14-inch, high resolution screen with tilt/swivel capability and a slim-line designed 92-, 104, or 110-key keyboard. Operational features include rule and reveal modes;

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variable field underline; auto blank; row and column indicators; and an adjustable audible alarm.

IDEA 9291 2DG, 9291 2DA, and 9291 2B/W Monochrome Displays are coax displays offered as alternatives to IBM's 3191 D and 3472 models. Model 2DG includes a green monochrome screen; models 2DA and 2B/W provide amber and black-on-white screens respectively.

These displays come with a 15-inch, tilt and swivel monitor with high resolution presentation and a slim-line designed 104- or 122-key keyboard. Models 2DG and 2DA provide three user-selectable screen sizes; the 2B/W model provides a choice of two screen formats. Noteworthy features common to these displays include enhanced dynamic setup mode with password protection; a multimode calculator with export capability; extended highlighting; 6000 keystroke storage; record/play/pause—chaining, delay, pause, multitransmit, and playback speed control; a rule mode; row and column indicators; and an extended status line.

IDEA 9292 2C Color Display is a coax display compatible with IBM's 3192 C display. The 9292 2C comes with a 14-inch, high-resolution, seven-color monitor with tilt/swivel capability and a slim-line designed 110- or 122-key keyboard. Standard features include three user-selectable screen sizes; dynamic color assignment; extended highlighting; a calculator with export capability; 6,000 keystroke storage; record/play/pause—chaining, delay, pause, multitransmit, and playback speed control; a rule mode; an enhanced setup mode with password protection; and row and column indicators.

IDEA 9292 2F Color Display is a coax display compatible with the IBM 3192 F model. The 9292 2F comes with a 14-inch, high resolution, seven-color monitor with tilt/swivel capability and a slim-line designed 104- or 122-key keyboard. It offers features such as four user selectable screen sizes; dynamic color assignment; extended highlighting; a calculator with export capability; 6000 keystroke storage; record/play/pause—chaining, delay, pause, multitransmit, and playback speed control; a rule mode; an enhanced setup mode with password protection; and row and column indicators.

IDEA 9292 2DG and 9292 2DA Monochrome Displays are coax displays compatible with the IBM 3192 D model. Model 2DG includes a green monochrome screen; model 2DA provides an amber screen. These displays come with a 15-inch tilt-and-swivel monitor with high resolution presentation and a slim-line designed 104- or 122-key keyboard. They offer four user-selectable screen sizes; extended highlighting; a calculator with export capability; 6,000 keystroke storage; record/play/pause—chaining, delay, pause, multitransmit, and playback speed control; an enhanced setup mode with password protection; a rule mode; and row and column indicators.

IDEA 9292C+ Color Display is a coax display compatible with the IBM 3192 C model. The 9292C+ includes a 14-inch, high resolution, seven-color monitor with tilt/swivel capability and a slim-line designed 110- or 122-key keyboard. It provides features such as dynamic color assignment; extended highlighting; nonvolatile setup options; auto keystrokes with pause capability; a reveal mode; and row and column indicators.

IDEA IBM Coax-Compatible Printers

IDEA 9307 Matrix Printer a coax printer compatible with IBM's 3287 model. Three versions of this printer are available. The 9307-01 is an 80-column monographics printer. The 9307-02 is a 136-column monographics printer. The 9307-03 is a 136-column, four-color printer supporting program symbol set graphics capability. All three models support draft-quality printing at 270 cps and near letter quality printing at 66 cps.

IDEA 9324 Matrix Printer emulates the IBM 3287-2 model printer and can be upgraded to an IBM 4224-compatible intelligent printer with datastream text and graphics operation. The 9324 provides draft, data processing, and near letter quality modes, printing draft documents at 300 to 400 cps.

IDEA 9345 and 9347 Shuttle Matrix Line Printers are IBM coax-compatible printers intended for 3270 systems applications. The 9345 is a 400 line-per-minute printer compatible with the IBM 3262-13 model; the 9347 is an 800 line-per-minute printer equivalent to the IBM 3262-3 model.
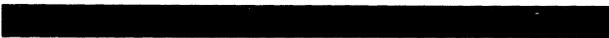
IDEA 9376 Laser Printer is a coax-compatible, tabletop, shared-resource page printer that emulates IBM's 3287 dot matrix printer. The 9376 produces letter-quality text and high-resolution graphics at 15 pages per minute. This printer has both RS-232-C serial and Centronics parallel interfaces. Therefore, the 9376 can connect to the mainframe cluster controller as well as to two additional host devices.

Technical Support

With service centers worldwide (160 centers in North America alone), IDEA Servcom provides one to three years of on-site maintenance for each display purchased from IDEA Courier, and one year of maintenance for each controller and printer. To continue this support, users can choose from a number of different service agreements. The service fee for each display ranges from $6 to $12 per month. A mail-in or carry-in agreement for displays is also offered at a cost of $30 to $80 annually per terminal. On-site support for each printer costs from $300 to $570 annually, and for each controller, $160 to $300 annually.

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Pricing

The following are prices for IDEA proprietary and IBM coax-compatible controllers, displays, and printers.

Equipment Prices

IDEA Proprietary Products		Purchase Price ($)
9420	Remote Controller	3,800
9422	Redundant Remote Controller	7,880-10,575
9425	Remote Controller	2,740-3,510
9440	Local Controller	13,330
9442	Redundant Local Controller	11,500-13,300
9210	Basic Function Monochrome Display	1,085
9212	Basic Function Monochrome Display	1,085
9216	Basic Function Color Display	1,695
9230	Extended Function Monochrome MLU Display	1,455
9232	Extended Function Monochrome MLU Display	1,455
9236	Extended Function Color MLU Display	1,895
9302	Matrix Printer	725
9303	Matrix Printer	3,400
9304	Matrix Printer	4,200
9306	Matrix Printer	4,500
9375	Laser Printer	5,700

IDEA Advanced Function Terminals		Purchase Price ($)
9262C		2,730
9264C		2,360
9268C		3,405
9268C Option:	Multisession System Software—includes a file transfer facility and an API.	95

IDEA IBM Coax-Compatible Products		Purchase Price ($)
9474-401L	Local Controller	10,800
9474-401R	Remote Controller	7,600
9474-402R	Remote Controller	7,600
9474-403R	Remote Controller	8,650
9474-441R	Remote Controller	6,250
9474-442R	Remote Controller	6,250
9474-443R	Remote Controller	7,500
9474-451R	Remote Controller	4,900
9474-452R	Remote Controller	4,900
9474-453R	Remote Controller	6,300
9474-481R	Remote Controller	2,850
9474-482R	Remote Controller	2,850
9474-483R	Remote Controller	4,500
9291 A+, G+	Monochrome Displays	975
9291 2DG, 2DA	Monochrome Displays	1,175
9291 2B/W	Monochrome Display	1,175
9292C+	Color Display	1,400
9292 2C	Color Display	1,400
9292 2F	Color Display	1,575
9292	2DG, 2DA Monochrome Displays	1,260
9307	Matrix Printer	1,595-1,995
9324	Matrix Printer	2,900-5,900
9345	Shuttle Matrix Line Printer	7,800
9347	Shuttle Matrix Line Printer	9,500
9376	Laser Printer	7,200

■

IDEA Courier, Inc.
9000 Series Display Terminals

datapro
ANALYSIS

IDEAssociates purchased Alcatel Information Systems (AIS) just as we finished preparing this report. The buyer formed a new entity, IDEA Courier, Inc. According to a company spokesperson, IDEA Courier plans to become a leader in the marketing of System 3X and IBM 3270-compatible communications products. IDEA Courier's product line will combine IBM 3270-compatible Courier products from Courier with the System 3X product line of IDEAssociates. The company plans to focus on adding proprietary features to its products.

The 9000 Series product line includes 3270-compatible terminals, communications controllers, and printers. Intelligent communicating workstations are also part of the product line. The 3270 product line includes system-compatible products using a proprietary coax protocol, as well as products compatible with the IBM coax protocol. Both product families include monochrome and color display terminals; local and remote controllers; and dot matrix, laser, and line printers.

Courier displays feature ergonomic design and productivity features, such as multiple logical units, for simultaneous access to multiple host sessions; personalized user setup, which allows users to customize display characteristics to meet personal preferences; and auto keystrokes with record/play/pause, which enables users to store frequently used phrases.

Courier controllers provide dual host access, ASCII and 3270 network integration, Token-Ring connectivity, and flexible device support. Courier printers meet varied speed and output requirements: display-attached printers with convenient screen copy capability for workstation users; dot matrix printers with speeds ranging from 200 to 400 characters per second (cps); laser printers producing up to 15 pages per minute; and line printers operating at speeds up to 800 lines per minute.

The Courier Intelligent Workstation Family consists of processing terminals and communicating workstations. The workstations support single-user applications, as well as peer-to-peer and peer-to-host networking requirements. They can connect to IBM 3270 hosts, asynchronous hosts, and Token-Ring or Ethernet LANs. The processing terminals are advanced 3270-compatible workstations that offer multiple logical units (MLUs) with windowing, host all-

VENDOR: IDEA Courier, Inc., 1515 W. 14th Street, Tempe, Arizona 85281. Telephone (602) 894-7000.
CANADIAN DISTRIBUTION: IDEA Courier, 6889 Rexwood Road, Mississauga, Ontario L4V 1R2. Telephone (416) 676-9930.
MODELS: Courier Proprietary Products: Courier 9236 Extended Function Color Display; Courier 9230 and 9232 Extended Function Monochrome Displays; Courier 9216 Basic Function Color Display; Courier PS/3270 Communicating Workstation; Courier Model 92G and 94 C/D Processing Terminals; Courier 9420, 9422, 9425, 9440, and 9442 Controllers; and Courier 9303, 9304, 9305, and 9306 Matrix Printers. Coax A Products: Courier 9291 A+ and G+ Monochrome Displays; Courier 9291 2DG, 9291 2DA, and 9291 2B/W Monochrome Displays; Courier 9292 2C Color Display; Courier 9292 C+ Color Display; Courier 9292 2F Color Display; Courier 9474-400 Series Controllers; Courier 9324 Matrix Printer; Courier 9345 and 9347 Shuttle Matrix Line Printers; and the Courier 9376 Laser Printer.
COMPETITION: IBM, Memorex/Telex, Lee Data, AT&T, Harris, and several others.
PRICE: Controller purchase prices range from $3,500 to $13,950. Display prices range from $1,295 to $2,245. All displays carry a one-year warranty.
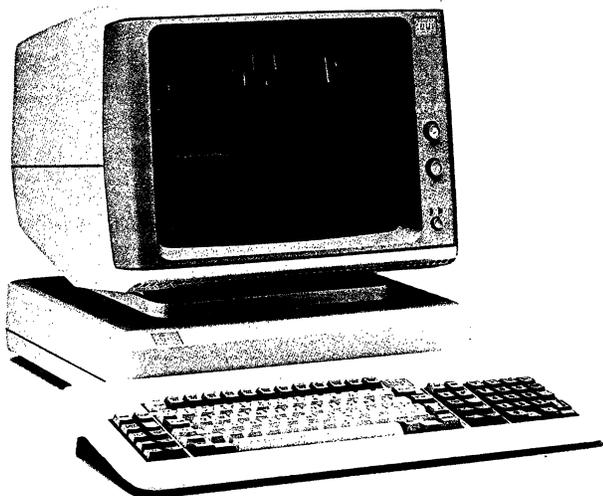
points-addressable (APA) graphics capability, optional IBM-compatible PC functionality, and LAN connectivity. The Courier communicating workstations combine the desktop intelligence of XTRA/Professional Series computers with networking hardware and software. Basically, these are microcomputers with built-in 3270 and/or LAN connectivity.

PRODUCT EVALUATION

IDEA Courier is keeping pace with the changes going on in the terminal display market. These changes result mainly from the competition brought about by the proliferation of PCs into what was once the display terminal's strict domain.

IDEA Courier, Inc.
9000 Series Display Terminals

The Courier 9236 Extended Function Color Display is a Courier proprietary terminal comparable to the IBM 3192 C.

The Courier 9000 Series product line has added processing terminals and communicating workstations, which combine the processing power of PCs with the ergonomic and operational features of display terminals. These "diskless workstations" have local processing power but lack certain PC features. They address users who do not need the storage capacity or disk drives associated with PCs. Processing terminals can attach to LANs, and they provide added security because data can not be removed from the terminal.

IDEA Courier offers both proprietary and IBM Coax A-compatible products. Its customers can choose between proprietary products with many features and products supporting IBM Coax protocol that are compatible with their existing equipment.

MARKET POSITION

The 3270 terminal market is far from dead. The advent of LANs, many of which support 3270 devices, breathed new life into the market. IBM's recent changes to its 319X display terminals, and its introduction of the 3174 Subsystem Control Unit, intensified the competition even more.

The 3270-compatible market is the largest subset of the alphanumeric display market. Recent studies by various market research firms put the current installed base of 3270-type terminals at well over 3 million units. Approximately half of the installed base are IBM terminals; the rest are 3270-compatible models from independent manufacturers. IBM's major competitors in this market include IDEA Courier, Memorex Telex, AT&T, and Lee Data.

IDEA Courier is a major, full-service competitor in the display terminal market. The Courier product line offers IBM 3270-compatible terminals, communications controllers, and printers; intelligent communicating workstations; micro-to-mainframe connectivity products; local area networks; and gateways. Over 500,000 Courier terminals are installed worldwide.

SPECIFICATIONS

MODELS: Courier Proprietary Products: Courier 9236 Extended Function Color Display; Courier 9230 and 9232 Extended Function Monochrome Displays; Courier 9216 Basic Function Color Display; Courier PS/3270 Communicating Workstation; Courier Model 92G and and 94 C/D Processing Terminals; Courier 9420, 9422, 9425, 9440, and 9442 Controllers; and Courier 9303, 9304, 9305, and 9306 Matrix Printers. Coax A Products: Courier 9291 A+ and G+ Monochrome Displays; Courier 9291 2DG, 9291 2DA, and 9291 2B/W Monochrome Displays; Courier 9292 2C Color Display; Courier 9292 C+ Color Display; Courier 9292 2F Color Display; Courier 9474-400 Series Controllers; Courier 9324 Matrix Printer; Courier 9345 and 9347 Shuttle Matrix Line Printers; and Courier 9376 Laser Printer.
DATE ANNOUNCED: Courier Proprietary Products: older components—April 1984; 92G and 94C/D terminals—January 1988. IBM Coax A-compatible products: July 1987.
DATE FIRST INSTALLED: Courier Proprietary Prod-

ucts: older components—April 1984; 92G and 94C/D—March 1988. IBM Coax A-compatible products: July 1987.
NUMBER INSTALLED TO DATE: Over 500,000 Courier terminals are installed worldwide.

SYSTEM COMPONENTS

COURIER PROPRIETARY PRODUCTS

Courier 9216 Basic Function Color Display

The Courier 9216 Basic Function Color Display features a 14-inch tilt and swivel monitor with a seven-color, high-resolution presentation and a slim-line-designed keyboard. The display includes advanced productivity features such as dynamic color assignment, dual logical

IDEA Courier, Inc.
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units, row and column indicator, and enhanced setup menus. Table 1 summarizes the specifications for the Courier 9216 Basic Function Color Display. *(Editor's Note: Table 1 and all subsequent tables can be found at the end of this report.)*

Courier 9230 and 9232 Extended Function Monochrome Displays

The Courier 9230 and 9232 Extended Function Monochrome Displays are IBM 3192 D-compatible terminals. The Courier 9230-06 green and 9232-06 amber Extended Function MLU displays provide expanded workstation support. With MLU, the user has five applications and a notepad session available with a single keystroke—segments of all six can be displayed on a single screen, and users can interact with any session while simultaneously monitoring the remaining sessions. In addition, the screen zooms to expand the interactive segment to full-screen presentation with a single keystroke. Information in one session can be copied to another session, and each session can be identified (personalized) when displaying segments of multiple sessions.

The Courier 9230-08 green and 9232-08 amber Extended Function Twisted Pair Displays transmit and receive data over twisted pair (telephone) wire. Users may locate twisted-pair displays up to 5,000 feet from Courier 942X or 944X Controllers. The twisted-pair displays are intended for existing sites where running additional coax is space constrained or too costly, or in new buildings already wired with twisted pair.

Optional features include ASCII host access, graphics support, and various alternate input devices. A display-attached printer can be integrated into the system. Table 2 contains specifications for the Courier 9230 and 9232 Extended Function Monochrome Displays.

Courier 9236 Extended Function Color Display

The Courier 9236 Extended Function Color Display is a seven-color, IBM 3192 C-compatible terminal. The Courier 9236-06 Extended Function Color MLU Display provides expanded workstation support. The MLU offers the same functions as described above for the Extended Function Monochrome Displays. In addition, the Courier 9236-08 Extended Function Color Twisted Pair Display provides the same features as its monochrome counterparts described above. Consult Table 3 for specifications of the Courier 9236 Extended Function Color Display.

Courier 92G and 94C/D Processing Terminals

The Courier Model 92G and 94C/D Processing Terminals combine 3270 workstation and, only if required, desktop

processing capabilities. Model 92G offers IBM 3192 G and 3179 G APA graphics compatibility, while the Model 94C/D provides the functionality of the IBM 3194 Models C, D, and H. Table 4 contains the specifications for the Courier Model 92G and 94C/D Processing Terminals.
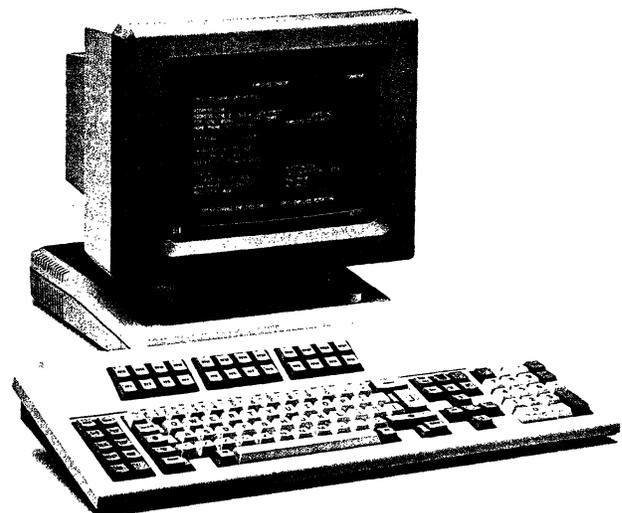
Courier PS/3270 Communicating Workstation

The Courier PS/3270 Communicating Workstation combines 3270 workstation and local processing capabilities. The workstation offers multiple connectivity options including Courier 9000 coax, IBM coax, asynchronous hosts, and Token-Ring or Ethernet Local Area Networks. Multiple logical units, host-based graphics, and personal computer (PC) applications are integral to the Courier PS/3270 Communicating Workstation. Table 5 contains the specifications for this product.
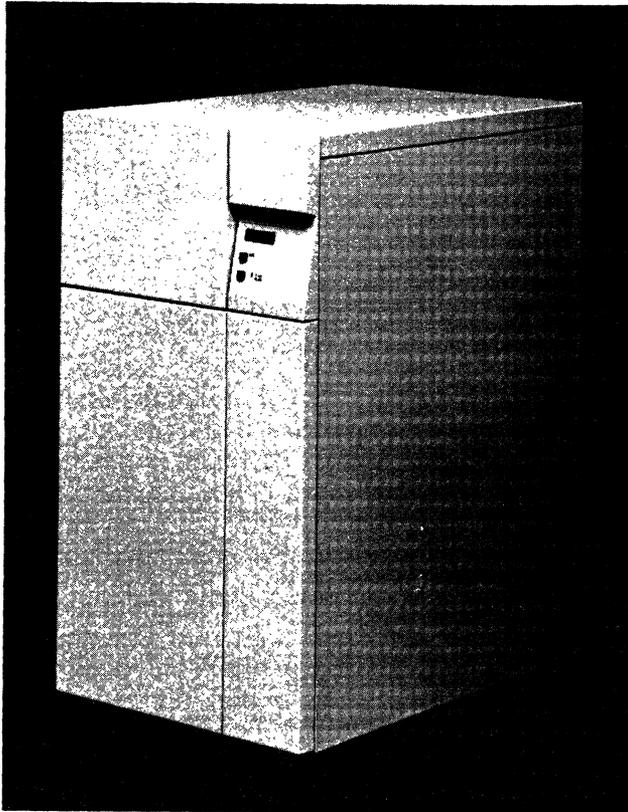
Controllers

The Courier 9420, 9422, and 9425 Remote Controllers and the Courier 9440 and 9442 Local Controllers are members of the Courier 9000 Series 3270-compatible cluster controllers. IDEA Courier offers redundant controller models for critical availability requirements. The 9420, 9422, 9440, and 9442 controllers start with an 11-port configuration. The Courier 9425 is offered in 4-port and 11-port remote controller models. The controllers are upgradable in increments of seven ports to a system which supports 32 physical devices.

Incremental upgrades are device adapters installed directly in the controller or in External Terminal Multiplexers (ETMs) located up to 5,000 feet from the controller. The ETM is connected to the controller by a single coax cable. This increases the maximum separation between a

The Courier 9291 Monochrome Display is an IBM coax-compatible display comparable to the IBM 3191 display.

IDEA Courier, Inc.
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The Courier 9474-40xR and 9474 401HS controllers are functionally equivalent to IBM controllers. These Courier controllers are designed to support a variety of IBM 3270 coax-compatible devices at both the host and individual device level.

device and its controller to 10,000 feet. The ETM supports eight Courier 9000 or C270 (earlier 3278-type displays) devices, which may be located up to an additional 5,000 feet away. A special 94621 device adapter can connect specially configured devices up to 5,000 feet away over twisted-pair wiring without the use of baluns. The Intelligent Device Adapter for Distributed Function Terminals permits connection of four IBM 3270 PCs. An Asynchronous Device Adapter is also available for connection of up to eight asynchronous terminals and hosts either via direct connect or dial-up using modems. Any combination of workstations with Digital VT100 or VT220 emulation and asynchronous hosts at speeds ranging from 50 bps to 19.2K bps is supported.

The 9000 controllers are functionally compatible with similarly configured IBM 3270 Information Display Systems. The remote controllers support SNA/SDLC and 3270 BSC, as well as the X.25/SNA packet-switching protocol. Dual logical unit support provides concurrent access to two sessions; Extended Data Stream (EDS) support expands programmer options to include the use of extended highlighting, and extended color, and Programmed Symbol Sets (PSSs)-based graphics to aid in data entry and office automation screen design. In addition, the remote controllers support RS-232-C connectivity and com-

bine interface options and protocols of 1200 to 19.2K bps in a BSC environment and 1200 to 64K bps in an SNA/SDLC environment. Point-to-point, multipoint, or switched connection via modems or other data circuit terminating equipment is supported. Menu-driven customization significantly reduces network customization time.
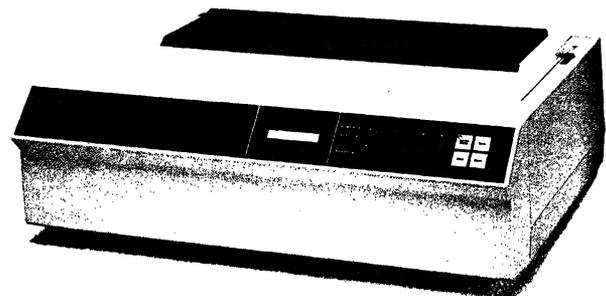
The 9440 and 9442 local controllers interface to IBM System/370, 308X, 3090, 4361, 4381, and compatible mainframes. Channel attachment of the local controller is made to a byte multiplexer, block multiplexer, or selector channel over standard Bus and Tag interface cables. The local controllers support SNA and non-SNA environments. In addition, the local controllers offer dual logical unit support and EDS support. Menu-driven customization is also offered.

Diagnostic capabilities supported include self-testing, error logging, status panel indicators, attribute reveal, response time monitoring, and line/channel capturing. The 9000 controllers support the Courier 92XX display terminals and 93XX matrix printers covered in this report.

Matrix Printers

Courier Matrix Printers interface with the host through the Courier 942X and Courier 944X Controllers. The printers operate in Data Stream Compatible (DSC) or SNA Character String (SCS) modes. The matrix printers feature a replaceable printhead with diagnostics to isolate printhead failure from logic failure, cut sheet and continuous forms handling, demand document capability, and an optional automatic sheet and envelope feeder. Ribbons for these printers have a life of over 10 million characters, and the printheads a life of more than 300 million characters.

The Courier 9303 Matrix Printer is a multifunction printer compatible with the IBM 3287 Models I and II. It offers draft-quality printing at 200 cps and NLQ print at 55 cps. The 9304 Matrix Printer is compatible with the IBM 3268. It offers draft-quality printing at 400 cps and

The Courier 9324 matrix printer has an IBM coaxial interface and can be upgraded to an IBM 4224-compatible intelligent printer with datastream text and graphics operation.

IDEA Courier, Inc.
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NLQ at 100 cps. The 9305 Matrix Color Printer offers four- and seven-color support. The 9305 offers color and monochrome draft-quality printing at 200 cps and NLQ at 100 cps. The 9306 Matrix Printer is a full-function printer offering EDS and PSS support as a standard feature. Four- and seven-color support at 400 cps draft and 100 cps NLQ, as well as single- or triple-plane PSS support, are standard features. The 9305 and 9306 are high-speed IBM 3287-2C equivalents. Table 7 summarizes specifications for the Courier matrix printers.

Courier 9375 Laser Printer

The Courier 9375 laser printer is a tabletop, shared-resource page printer that produces text and high-resolution graphics at 15 pages per minute. The 9375 has both RS-232-C serial (300 to 19.2K bps) and Centronics parallel interfaces which allow connection to the Courier 942X and 944X controllers via the Courier 932X Non-Integrated Printer Controllers (NIPCs). Table 8 contains specifications for the Courier 9375 Laser Printer.

COURIER IBM COAX-COMPATIBLE PRODUCTS

Courier 9291 A+ and G+ Monochrome Displays

The Courier 9291 A+ and G+ Monochrome Displays are compatible with the IBM 3191 A and B displays. Additional interfaces are not required for the 9291 to attach to the Courier 9474 controller or to an IBM 3174, 3274, or 3276 control unit. Table 9 contains specifications for the Courier 9291 A+ and G+ Monochrome Displays.

Courier 9291 2DG, 9291 2DA, and 9291 2B/W Monochrome Displays

The Courier 9291 2DG, 9291 2DA, and 9291 2B/W monochrome displays are compatible with the IBM 3191D display. Specifications are found in Table 10.

Courier 9292 2C Color Display

The Courier 9292 2C Color Display is compatible with the IBM 3192C display and supports additional productivity features and 43-line applications. The Courier 9292C+ Color Display is compatible with the IBM 3192C+ display. Table 11 lists specifications for the 9292 2C.

Courier 9292 2F Color Display

The Courier 9292 2F Color Display is compatible with the IBM 3192F display. Table 12 contains specifications for this product.

Courier 9474-400 Series Controllers

These controllers are used in place of compatible IBM 3174 control units with no modifications to mainframe hardware, system software, or application software. The controllers are designed to support a variety of IBM 3270 coax-compatible devices at both the host and individual device level. One local controller and seven remote controllers make up the series.

The Courier 9474-401L Local Controller is compatible with the IBM 3174-1L. It interfaces to IBM System/370, 43XX, 9370, or 30XX or compatible processors. It offers 18 ports and is expandable to 32 ports with the addition of one coax device adapter. This model operates in SNA or non-SNA mode. In addition, the 9474-401L supports up to 24 asynchronous devices (56 total devices under SNA) with the optional ASCII device support feature. The 9474-401L also provides a token-ring gateway option. Channel attachment is made to the byte multiplexer or block multiplexer with operation in either byte mode or burst mode at data rates of up to 1.25M bytes per second.

The Courier 9474-401R Remote Controller is compatible with the IBM 3174-1R. It uses an RS-232-C interface and operates in SNA/SDLC, SNA/X.25 (PSH or QLLC), or BSC mode. The device offers 18 ports and is expandable to 32 ports with the addition of one coax device adapter. This controller also offers an ASCII device support feature, enabling attachment of up to 24 ASCII devices (56 total devices under SNA). A dual host option is also available for SNA/SNA, SNA/High Speed SNA, and SNA/BSC.

The Courier 9474-401HS Remote Controller is also compatible with the IBM 3174-1R. It uses a V.35 interface and operates in SNA/SDLC mode at 64K bps. Device support and options are the same as for the 9474-401R.

The Courier 9474-402R Remote Controller is compatible with the IBM 3174-2R. It uses an X.21 interface and operates in SNA/X.25 (PSH or QLLC) mode. Device support, except for dual host, is the same as for the 9474-401R.

The Courier 9474-403R Remote Controller is compatible with the IBM 3174-3R. It contains a token-ring interface and operates in SNA mode. Device support, except for dual host, is the same as for 9474-401R.

The Courier 9474-481R Remote Controller is compatible with the IBM 3174-81R. It offers four ports and is expandable to eight ports with the addition of a single coax device adapter. It uses an RS-232-C interface and operates in SNA/SDLC, SNA/X.25 (PSH or QLLC), or BSC mode. The 9474-481R supports up to two asynchronous devices (10 total devices under SNA). It also supports DFT and DSL devices.

IDEA Courier, Inc.
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The Courier 9474-482R Remote Controller is compatible with the IBM 3174-82R. It offers an X.21 interface and operates in SNA/X.25 (PSH or QLLC) mode only. Device support is the same as for the 9474-481R.

The Courier 9474-483R Remote Controller operates in SNA protocol with a token-ring interface. Device support is the same as for the 9474-481R. There is no IBM equivalent for this model.

All remote controllers listed above support point-to-point or multipoint configurations. SNA/SDLC operation uses nonswitched facilities (half duplex or full duplex) at speeds ranging from 1200 bps to 19.2K bps (9474-401R), and 64K bps (9474-401HS or 9474-481R); SDLC switched configurations operate from 1200 to 9600 bps and X.25 nonswitched and switched operate from 1200 bps to 19.2K bps. BSC operation uses nonswitched facilities (half duplex or full duplex) at speeds from 1200 to 9600 bps.

The Courier 9474-400 Series Controllers support the devices listed in Table 13.

The Courier 9499 is a 3270 coax multiplexer that is compatible with the IBM 3299. It connects eight coax devices to either the Courier 9474-400 or IBM 3174 controllers (except 9474-48XR models). The 9499 supports a variety of Category A devices and is attached to the controller with a single coax cable up to a maximum of 4,920 feet. Attachment of the Courier 9499 coax multiplexer is designed for customer setup and does not require software or hardware modifications when attached to a Courier 9474-400 Series Controller.

Asynchronous Communications Support (ACS) is offered as an optional feature and provides three modes of asynchronous communication: 3270 emulation for ASCII devices; ASCII emulation for 3270 devices; and ASCII device to ASCII host pass-through. The ACS feature is supported by all models in the 9474-400 Series. It provides 3270 emulation and attachment of 2 asynchronous devices on the 9474-48XR and 24 devices on the 9474-401L, 9474-40XR, and 9474-401HS.

Table 14 lists some asynchronous devices that may be attached through this feature.

ASCII devices predefined by the Courier 9474-400 software may be configured on-line without interrupting system operation. Additional ASCII devices can be defined using the off-line ASCII Definition Utility (ADU). In addition, there are hardware and software modules within the controller that perform the conversion between the ASCII data format used by the terminals and the 3270 mode datastream sent to and from the host. Some of the ACS standard features are listed in Table 15. Table 16 summarizes features and specifications of the Courier 9474-400 Series Controllers.

Courier 9324 Matrix Printer

The Courier 9324 Matrix Printer offers features and capabilities required in 3270 systems. IDEA Courier offers two models of this printer: the Courier 9324-01 and the 9324-03. Both printers can be upgraded to an IBM 4224-compatible intelligent printer with datastream text and graphics operation. Table 17 contains specifications for the Courier 9324 Matrix Printer.

Shuttle Matrix Line Printers

The Courier 9345 and 9347 Shuttle Matrix Line Printers are IBM coax-compatible printers intended for 3270 systems applications. The 9345 is compatible with the IBM 3262-13 printer, and the Courier 9347 is equivalent to the IBM 3262-3 printer. These systems can directly connect to the Courier 9474 Controllers and to IBM 3174, 3274, 3276 and equivalent controllers. Table 18 lists specifications for the Courier 9345 and 9347 Shuttle Matrix Line Printers.

Courier 9376 Laser Printer

The Courier 9376 Laser Printer is a tabletop, shared-resource page printer that produces letter-quality text and high-resolution graphics at 15 pages per minute. The 9376 has an IBM coax-compatible interface that allows connection to Courier's 9474 controllers as well as to IBM's 3174, 3274, and 3276 controllers. The 9376 emulates IBM's 3287 dot matrix printer. The 9376 also has an RS-232-C serial and Centronics parallel interface. The user can attach the 9376 laser printer to the mainframe cluster controller and also attach two other host devices to the serial and parallel ports through these interfaces. Table 19 summarizes specifications for the Courier 9376 Laser Printer.

PRICING

The following contains list prices for Courier proprietary and IBM Coax A displays and Courier proprietary and IBM Coax A controllers.

IDEA Courier, Inc.
9000 Series Display Terminals

EQUIPMENT PRICES

		Purchase Price ($)
DISPLAYS		
9291 A+	IBM Coax A	1,295
9291 G+	IBM Coax A	1,295
9292 C+	IBM Coax A	2,045
9291 2DA, DG	IBM Coax A	1,525
9291 BW	IBM Coax A	1,725
9292 2C	IBM Coax A	2,045
9292 2DA, 2DG	IBM Coax A	1,895
9292 2F	IBM Coax A	2,245
9210	Courier Proprietary	1,295
9216	Courier Proprietary	2,045
9230-06	Courier Proprietary	1,895
9232-06	Courier Proprietary	1,895
9236-06	Courier Proprietary	2,145
CONTROLLERS		
9474 401L	IBM Coax A	13,950
9474-401R, 402R	IBM Coax A	10,950
9474-403R	IBM Coax A (Token Ring)	12,450
9474-441R	IBM Coax A	7,925
9474-442R	IBM Coax A	7,925
9474-443R	IBM Coax A (Token Ring)	9,450
9474-451R	IBM Coax A	5,675
9474-452R	IBM Coax A	5,675
9474-453R	IBM Coax A (Token Ring)	7,175
9474-481R	IBM Coax A	3,500
9474-482R	IBM Coax A	3,500
9474-483R	IBM Coax A (Token Ring)	5,250
9420-01	Courier Proprietary	5,700
9440	Courier Proprietary	9,100
9425 (4 port)	Courier Proprietary	3,600
9425 (11 port)	Courier Proprietary	5,100

IDEA Courier, Inc.
9000 Series Display Terminals

TABLE 1. COURIER 9216 BASIC FUNCTION COLOR DISPLAY

FEATURES AND HIGHLIGHTS	**Display Enhancements**	• Extended Color	**Keyboard Enhancements**	**Optional Features**
	• 14-inch, High Resolution Color Display	• Entry Assist	• Slim-line, Adjustable Design	• Display Attached Printer
	• Flicker-free Character Presentation	• Programmable Security Lock	• Quiet, Positive Tactile Keystrokes	• Light Pen
	• Tilt/Swivel Monitor	• Row and Column Indicator	• Wide-style Sculptured Keycaps	• Numeric Keypad with Separate Enter Key
		• Variable Field Underline	• Textured Home Row Indicators	• 24 Program Function Keypad
	Operational Enhancements	• Adjustable Audible Alarm	• Control Key Color Differentiation	
	• Dual Logical Units	• Auto Blank	• User Modifiable Keyboards	
	• Dynamic Color Assignment	• Customer Installation	• Extendable Coiled Cable (detachable from terminal)	
	• Extended Data Stream Support	**Diagnostic Aids**		
	• Extended Highlighting	• Run-time Diagnostics		
	• Enhanced Set Up Mode	• Reveal Mode		
		• Test Mode		
		• Line Capture Display		
TECHNICAL DATA	**Physical Characteristics**	**Keypad**	**Cable Lengths**	
		Height: 2.2 in. (5.6 cm)	AC Power: 6 ft. standard	
	Monitor and Logic Base	Width: 4.3 in. (10.8 cm)	Keyboard: 1.0 ft. coiled to 5.0 ft. extended	
	Height: 16 in. (40.6 cm)	Depth: 9 in. (22.9 cm)		
	Width: 16 in. (40.6 cm)	Weight: 3 lbs. (1.4 Kg)		
	Depth: 15.6 in. (39.6 cm)			
	Weight: 35 lbs. (15.8 Kg)	**Adjustments**		
		Tilt: 20° up, 5° down		
	92-Key Keyboard	Swivel: 90° left or right		
	Height: 2.2 in. (5.6 cm)	Keyboard/Keypad: 5° or 11.5°		
	Width: 16 in. (40.6 cm)	Keycap Height: 30 mm to home row at 5°		
	Depth: 9 in. (22.9 cm)			
	Weight: 7.5 lbs. (3.4 Kg)	**Character Presentation**		
		Character Cell: 9 x 14		
	110-Key Keyboard	Character Presentation: 7 x 9		
	Height: 2.2 in. (5.6 cm)			
	Width: 19.3 in. (49.0 cm)			
	Depth: 9 in. (22.9 cm)			
	Weight: 5.5 lbs. (2.5 Kg)			
POWER AND ENVIRONMENTAL SPECIFICATIONS	Power: 135 Watts	Noise Levels: Less than 55 dBA at 1 meter	Humidity	Altitude: 10,000 ft.
	Voltage: 100 – 120 V ± 10%, or 220 – 240 V ± 10%	Coax Specifications: RG62A/U Coax Cable	Operating: 10% to 85% RH (non-condensing)	Installation Method: Customer Set Up
	Frequency: 50 or 60 Hz	Temperature	Storage: 5% to 95% RH (non-condensing)	
	Heat Dissipation: 460 BTU/Hour (maximum)	Operating: 41°F to 104°F (5°C to 40°C)		
		Storage: −40°F to 160°F (−40°C to 70°C)		

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TABLE 2. COURIER 9230 AND 9232 EXTENDED FUNCTION MONOCHROME DISPLAYS

FEATURES AND HIGHLIGHTS	**Display Enhancements** • 15-inch, High Resolution, Flicker-free Display • Green or Amber Phosphor • Tilt/Swivel Monitor • Security Keylock • Auto Log-off/Power-off • Auto Blank **Operational Enhancements** • User Selectable Screen Sizes (1920, 2560, 3440, and 3564 characters) • Extended Data Stream Support • Extended Highlighting • Enhanced Set Up Mode	• Automated Keystrokes • Dual Logical Units • Split Screen/Scrolling • Row and Column Indicator • High-speed Cursor • Entry Assist • Note Pad • APL/Text • Variable Field Underline • Adjustable Audible Alarm • Blinking Fields • Twisted Pair Wire Support (9230-08, 9232-08) • Courier 9900 Departmental Processor Connectivity (9230-06, 9232-06) • Customer Installation	**Diagnostic Support** • Run-time Diagnostics • Reveal Mode • Test Mode • Line Capture • Built-in Power-on Diagnostics **Keyboard Enhancements** • Slim-line, Adjustable Design • Quiet, Positive Tactile Keystrokes • Wide-style Sculptured Keycaps • Deep-dished Home Keys • Control Key Color Differentiation • User Modifiable Keyboards • Extendable Coiled Cable (detachable from terminal)	**Optional Features** • Multiple Logical Unit Enhancements • Display Attached Printer • Programmed Symbol Sets • Attribute Select Keypad • Numeric Keypad • 24 Program Function Keypad • Selector Light Pen • Bar Code Reader • Optical Character Reader • Magnetic Slot Reader • VTC ASCII Emulator
TECHNICAL DATA	**Physical Characteristics** **Monitor and Logic Base** Height: 16.0 in. (40.6 cm) Width: 16.0 in. (40.6 cm) Depth: 15.6 in. (39.6 cm) Weight: 38 lbs. (17.1 Kg) **92-Key Keyboard** Height: 2.2 in. (5.6 cm) Width: 16.0 in. (40.6 cm) Depth: 9.0 in. (22.9 cm) Weight: 7.5 lbs. (3.4 Kg) **110-Key Keyboard** Height: 2.2 in. (5.6 cm) Width: 19.3 in. (49.0 cm) Depth: 9.0 in. (22.9 cm) Weight: 5.5 lbs. (2.5 Kg)	**122-Key Keyboard** Height: 2.2 in. (5.6 cm) Width: 21.0 in. (53.3 cm) Depth: 8.0 in. (20.3 cm) Weight: 4.7 lbs. (2.1 Kg) **Keypad** Height: 2.2 in. (5.6 cm) Width: 4.3 in. (10.8 cm) Depth: 9.0 in. (22.9 cm) Weight: 3 lbs. (1.4 Kg) **Adjustments** Tilt: 20° up to 5° down Swivel: 90° left or right Keyboard/Keypad: 5° or 11.5° adjustments (92- or 110-key keyboard,	and all keypads); 5° 10°, or 15° adjustments (122-key keyboard) Keycap Height: 30 mm to home row at 5° **User Selectable Screen Sizes** Cell 9 x 16: 1920 characters 9 x 12: 2560 characters 9 x 10: 3440 characters 9 x 10: 3564 characters	Typical Uppercase Presentation 7 x 8: 1920 characters 7 x 8: 2560 characters 7 x 7: 3440 characters 7 x 7: 3564 characters Total Character Presentation 7 x 10: 1920 characters 7 x 10: 2560 characters 7 x 8: 3440 characters 7 x 8: 3564 characters **Cable Lengths** AC Power: 9 ft. standard, 6 ft. and 15 ft. optional Keyboard/Keypad: 1.0 ft. coiled, extends to 5.0 ft.
POWER AND ENVIRONMENTAL SPECIFICATIONS	Power: 135 Watts (maximum) Voltage: 100−120 V ± 10%, or 220−240 V ± 10% Frequency: 50 or 60 Hz ± 2% Heat Dissipation: 460 BTU/Hour (maximum)	Noise Levels: less than 55 dBA at 1 meter Coax Specifications: RG62A/U Coax Cable Temperature Operating: 41°F to 106°F (5°C to 41°C) Storage: −40°F to 160°F (−40°C to 71°C)	Humidity Operating: 10% to 85% RH (non-condensing) Storage: 5% to 95% RH (non-condensing) Altitude: Up to 10,000 ft. Installation Method: Customer Set Up	

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TABLE 3. COURIER 9236 EXTENDED FUNCTION COLOR DISPLAY SPECIFICATIONS

FEATURES AND HIGHLIGHTS

Display Enhancements

- 14-inch, High Resolution, Flicker-free Display
- Tilt/Swivel Monitor
- Security Keylock
- Auto Log-off/Power-off
- Auto Blank

Operational Enhancements

- User Selectable Screen Sizes (1920 and 2560 characters)
- Extended Data Stream Support
- Extended Highlighting
- Enhanced Set Up Mode
- Automated Keystrokes

- Dual Logical Units
- Split Screen/Scrolling
- Row and Column Indicator
- High-speed Cursor
- Entry Assist
- Note Pad
- APL/Text
- Variable Field Underline
- Adjustable Audible Alarm
- Twisted Pair Wire Support (9236-08)
- Courier 9900 Departmental Processor Connectivity (9236-06)
- Customer Installation

Diagnostic Support

- Run-time Diagnostics
- Reveal Mode

- Test Mode
- Line Capture
- Built-in Power-on Diagnostics

Keyboard Enhancements

- Slim-line, Adjustable Design
- Quiet, Positive Tactile Keystrokes
- Wide-style Sculptured Keycaps
- Deep-dished Home Keys
- Control Key Color Differentiation
- User Modifiable Keyboards
- Extendable Coiled Cable (detachable from terminal)

Optional Features

- Multiple Logical Unit Enhancements
- Display Attached Printer
- Programmed Symbol Sets
- Attribute Select Keypad
- Numeric Keypad
- 24 Program Function Keypad
- Selector Light Pen
- Bar Code Reader
- Optical Character Reader
- Magnetic Slot Reader
- VTC ASCII Emulator

TECHNICAL DATA

Physical Characteristics

Monitor and Logic Base
Height: 16.0 in. (40.6 cm)
Width: 16.0 in. (40.6 cm)
Depth: 15.6 in. (39.6 cm)
Weight: 38 lbs. (17.1 Kg)

92-Key Keyboard
Height: 2.2 in. (5.6 cm)
Width: 16.0 in. (40.6 cm)
Depth: 9.0 in. (22.9 cm)
Weight: 7.5 lbs. (3.4 Kg)

110-Key Keyboard
Height: 2.2 in. (5.6 cm)
Width: 19.3 in. (49.0 cm)
Depth: 9.0 in. (22.9 cm)
Weight: 5.5 lbs. (2.5 Kg)

122-Key Keyboard
Height: 2.2 in. (5.6 cm)
Width: 21.0 in. (53.3 cm)
Depth: 8.0 in. (20.3 cm)
Weight: 4.7 lbs. (2.1 Kg)

Keypad
Height: 2.2 in. (5.6 cm)
Width: 4.3 in. (10.8 cm)
Depth: 9.0 in. (22.9 cm)
Weight: 3 lbs. (1.4 Kg)

Adjustments
Tilt: 20° up to 5° down
Swivel: 90° left or right
Keyboard/Keypad: 5° or

11.5° adjustments (92- or 110-key keyboard, and all keypads); 5°, 10°, or 15° adjustments (122-key keyboard)
Keycap Height: 30 mm to home row at 5°

User Selectable Screen Sizes
Cell
9 x 12: 1920 characters
9 x 12: 2560 characters
Typical Uppercase Presentation
7 x 8: 1920 characters
7 x 8: 2560 characters

Total Character Presentation
7 x 10: 1920 characters
7 x 10: 2560 characters

Cable Lengths
AC Power: 9 ft. standard, 6 ft. and 15 ft. optional
Keyboard/Keypad: 1.0 ft. coiled, extends to 5.0 ft.

POWER AND ENVIRONMENTAL SPECIFICATIONS

Power: 135 Watts (maximum)
Voltage: 100—120 V ± 10%, or 220—240 V ± 10%
Frequency: 50 or 60 Hz ± 2%
Heat Dissipation: 460 BTU/Hour (maximum)

Noise Levels: less than 55 dBA at 1 meter
Coax Specifications: RG62A/U Coax Cable
Temperature
　Operating: 41°F to 106°F (5°C to 41°C)
　Storage: −40°F to 160°F (−40°C to 71°C)

Humidity
　Operating: 10% to 85% RH (non-condensing)
　Storage: 5% to 95% RH (non-condensing)
Altitude: Up to 10,000 ft.
Installation Method: Customer Set Up

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TABLE 4. COURIER MODEL 92G AND 94/D PROCESSING TERMINALS SPECIFICATIONS

FEATURES AND HIGHLIGHTS				
	Display Enahncements • 14-inch, 16-color Monitor • 14-inch, Black-on-White Monitor with 16 Shades of Gray • Dynamic Color and Gray Scale Assignment • 720 x 400 Resolution, Text Modes • Tilt and Swivel Monitor • Programmable and Physical Security Keylocks • Auto Log-off • Auto Blank **Operational Enhancements (3270 mode)** • Multiple Logical Units • Session Windowing (overlaid style) • Optional Host Graphics and VTW (VT220) with MLU windows	• Screen Session Copy, Move and Paste Capability • Extended Data Stream Support • Selectable Screen Size Support (1920 or 2560 characters) • Row and Column Indicator • PC/XT Compatible Option Slots • Customer Installation **Advanced Feature Enhancements** • 80286 Processor, 8 MHz • 80287 Math Co-processor Support • 512K RAM Memory (512K additional available) • Non-volatile Setup Features • Hot-key Between 3270 and MS-DOS Applications (when MS-DOS is installed)	• 3270 Function Requires little MS-DOS Memory (when MS-DOS is installed) **Keyboard Enhancements** • Slim-line, Adjustable Design • 122-key Keyboard • Quiet, Positive Tactile Keystrokes • Wide-style Sculptured Keycaps • PC and 3270 Keys Color Coded • Deep-dished Home Keys • Control-key Color Differentiation • User Modifiable Keycap Format • Extendable Coiled Cable (detached keyboard) **Optional Features** • Display Attached Printer	• All-points-addressable Graphics Feature • 3.5-inch Disk Drive, 720KB Format • MS-DOS 3.3 • System Memory Feature with PC Support • PC/XT Compatible Option Slots • Expansion Chassis with 20MB Hard Disk Drive • Token-Ring Option Card • Ethernet Option Card • Asynchronous Communication Software VTW (VT220) • 80287 Co-processor • 3270 Multi Session System **Diagnostic Aids** • Reveal Mode • Line Capture • Built-in Power-on Diagnostics • Off-line Diagnostics in ROM BIOS
TECHNICAL DATA	**Physical Characteristics** **Monitor and Logic Base** Height: 16.8 in. (42.7 cm) Width: 13.5 in. (34.4 cm) Depth: 14.5 in. (36.8 cm) Weight: 29.8 lbs. (13.5 kg)— B&W; 41 lbs. (18.6 kg)— Color	**Typewriter Keyboard (122-Key)** Height: 2.2 in. (5.6 cm) Width: 21 in. (53.3 cm) Depth: 8 in. (20.3 cm) Weight: 4.6 lbs. (2.1 kg)	**Adjustments** Tilt: 20° up, 5° down Swivel: 90° left or right Keyboard: 5° or 11.5° Keycap Height: 30 mm to home row at 5° **User Selectable Screen Sizes** Character Cell: 1920— 9 x 16; 2560—9 x 12	**Typical Uppercase Presentation:** 1920— 7 x 8; 2560—7 x 8 **Total Character Presentation:** 1920— 7 x 14; 2560—7.x10 **Cable Length** Keyboard: 11.8 in. (30 cm) coiled to 5 feet (1.5 m) extended

POWER AND ENVIRONMENTAL SPECIFICATIONS	Power: 120 Watts (B&W); 180 Watts (Color)
	Voltage: 90V to 132V or 180V to 264V
	Frequency: 48 to 62 Hz
	Heat Dissipation: 770 BTU/Hour (B&W); 1154 BTU/Hour (Color)
	Noise Levels: Less than 55 dBA at 1 meter
		Coax Specifications: RG62A/U Coax Cable
		Temperature
		    Operating: 50°F (5°C) to 104°F (41°C)
		    Storage: - 20°F (- 40°C) to 158°F (71°C)
			Humidity
			    Operating: 10% to 90% RH (non-condensing)
			    Storage: 5% to 95% RH (non-condensing)
				Altitude
				    Operating: 0 to 8,000 feet (2,438 meters)
				    Storage: 0 to 40,000 feet (12,200 meters)
				Installation Method: Customer Set Up

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TABLE 5. COURIER PS/3270 COMMUNICATING WORKSTATION SPECIFICATIONS

FEATURES AND HIGHLIGHTS				
	Display Enhancements • 14-inch, 16-color Monitor • 14-inch, Black-on-White Monitor with 16 Shades of Gray • Dynamic Color and Gray Scale Assignment • 720 x 400 Resolution, Text Modes • Tilt and Swivel Monitor • Programmable and Physical Security Keylocks • Auto Log-off • Auto Blank **Operational Enhancements (3270 mode)** • Choice of Entry Level or Multi Session System Software • Session Windowing (overlaid style) • Optional Host Graphics and VTW (VT220) with MLU windows	• Screen Session Copy, Move and Paste Capability • Extended Data Stream Support • Selectable Screen Size Support (1920 or 2560 characters) • Row and Column Indicator • PC/XT Compatible Option Slots • Full 3270-compatible Status Line • High Performance 3270 Operation **Advanced Feature Enhancements** • 80286 Processor, 8 MHz • 80287 Math Co-processor Support • One MByte RAM Memory • Non-volatile Setup Features • Hot-key Between 3270 and MS-DOS Applications	• 3270 Function Requires little MS-DOS Memory **Keyboard Enhancements** • Slim-line, Adjustable Design • 122-key Keyboard • Quiet, Positive Tactile Keystrokes • Wide-style Sculptured Keycaps • PC and 3270 Keys Color Coded • Deep-dished Home Keys • Control-key Color Differentiation • User Modifiable Keycap Format • Extendable Coiled Cable (detached keyboard) **Optional Features** • Display Attached Printer	• All-points-addressable Graphics Feature • 3.5-inch Disk Drive, 720KB Format • MS-DOS 3.3 • Expansion Chassis with 20MB Hard Disk Drive • Token-Ring Option Card • Ethernet Option Card • Asynchronous Communication Software VTW (VT220) • 80287 Co-processor • 3270 Multi Session System **Diagnostic Aids** • Reveal Mode • Line Capture • Built-in Power-on Diagnostics • Off-line Diagnostics in ROM BIOS

TECHNICAL DATA				
	Physical Characteristics **Monitor and Logic Base** Height: 16.8 in. (42.7 cm) Width: 13.5 in. (34.4 cm) Depth: 14.5 in. (36.8 cm) Weight: 29.8 lbs. (13.5 kg)— B&W; 41 lbs. (18.6 kg)— Color	**Typewriter Keyboard (122-Key)** Height: 2.2 in. (5.6 cm) Width: 21 in. (53.3 cm) Depth: 8 in. (20.3 cm) Weight: 4.6 lbs. (2.1 kg)	**Adjustments** Tilt: 20° up, 5° down Swivel: 90° left or right Keyboard: 5° or 11.5° Keycap Height: 30 mm to home row at 5° **User Selectable Screen Sizes** Character Cell: 1920— 9 x 16; 2560—9 x 12	**Typical Uppercase Presentation:** 1920— 7 x 8; 2560—7 x 8 **Total Character Presentation:** 1920— 7 x 14; 2560—7 x10 **Cable Length** Keyboard: 11.8 in. (30 cm) coiled to 5 feet (1.5 m) extended

POWER AND ENVIRONMENTAL SPECIFICATIONS				
	Power: 120 Watts (B&W); 180 Watts (Color) Voltage: 90V to 132V or 180V to 264V Frequency: 48 to 62 Hz Heat Dissipation: 770 BTU/Hour (B&W); 1154 BTU/Hour (Color) Noise Levels: Less than 55 dBA at 1 meter	Coax Specifications: RG62A/U Coax Cable Temperature Operating: 50°F (5°C) to 104°F (41°C) Storage: - 20°F (- 40°C) to 158°F (71°C)	Humidity Operating: 10% to 90% RH (non-condensing) Storage: 5% to 95% RH (non-condensing)	Altitude Operating: 0 to 8,000 feet (2,438 meters) Storage: 0 to 40,000 feet (12,200 meters) Installation Method: Customer Set Up

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TABLE 6. COURIER 9420, 9422, 9425, 9440, AND 9442 CONTROLLERS

TECHNICAL DATA	**Physical Characteristics** **Remote (ITT 9420)** Height: 18.3 in. (46.5 cm) Width: 16.7 in. (42.4 cm) Depth: 16.7 in. (42.4 cm) Weight: 54.7 lbs. (24.6 Kg) **Redundant Remote (ITT 9422)** Height: 32.8 in. (83.3 cm) Width: 16.7 in. (42.4 cm) Depth: 16.7 in. (42.4 cm) Weight: 98.9 lbs. (44.5 Kg)	**Remote (ITT 9425)** Height: 5 in. (12.7 cm) Width: 18 in. (45.7 cm) Depth: 12 in. (30.5 cm) Weight: 22 lbs. (9.9 Kg) **Local (ITT 9440)** Height: 32.8 in. (83.3 cm) Width: 16.7 in. (42.4 cm) Depth: 16.7 in. (42.4 cm) Weight: 61.3 lbs. (27.6 Kg)	**Redundant Local (ITT 9442)** Height: 47.3 in. (120.1 cm) Width: 23.5 in. (59.7 cm) Depth: 24 in. (61.0 cm) Weight: 117 lbs. (52.7 Kg) **External Terminal Multiplexer (94320)** Height: 4.5 in. (11.4 cm) Width: 13.8 in. (35.0 cm) Depth: 9 in. (22.9 cm) Weight: 10.5 lbs. (4.73 Kg)

POWER AND ENVIRONMENTAL SPECIFICATIONS	Power: 50 Watts (maximum on ITT 9425 model); 225 Watts (maximum on ITT 9420, ITT 9422, ITT 9440, ITT 9442 models); 40 Watts (maximum on 94320) Voltage: 100−120V ± 10% (ITT 9425, ITT 9420, ITT 9422, ITT 94320), 220−240V ± 10% (all models) Frequency: 50−60 Hz ± 2%	Heat Dissipation: 426 BTU/Hour (maximum on ITT 9425 model); 768 BTU/Hour (maximum on ITT 9420, ITT 9422, ITT 9440, ITT 9442 models); 145 BTU/Hour (94320) Noise Levels: Less than 60 dBA at 1 meter Coax Specifications: RG62A/U Coax Cable	Temperature
			  Operating: 41°F to 106°F (5°C to 41°C)
			  Storage: -42°F to 160°F (-41°C to 71°C)
			Humidity
			  Operating: 10% to 85% RH (non-condensing)
			  Storage: 5% to 95% RH (non-condensing)
			Altitude: Up to 10,000 ft.

CONTROLLER MODELS/ SUPPORT	The ITT 9000 series controllers are available in the models listed below and they are expandable to 32 ports by adding optional device adapters. • ITT 9425 (four) Compact Remote (4-32 port) • ITT 9425 (eleven) Compact Remote (11-32 port)	• ITT 9420 Remote (11-32 port) • ITT 9422 Remote Redundant (11-32 port) • ITT 9440 Local (11-32 port) • ITT 9442 Local Redundant (11-32 port) The ITT 9000 series controllers support the following device adapters: • 94100 Asynchronous Device Adapter	• 94300 Device Adapter • 94500 Intelligent Device Adapter for Distributed Function Terminals • C270 Device Adapter (ITT 9420, ITT 9422, ITT 9440, ITT 9442 only)

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TABLE 7. COURIER 9301, 9303, 9304, AND 9306 MATRIX PRINTERS

FEATURES AND HIGHLIGHTS			POWER AND ENVIRONMENTAL SPECIFICATIONS

• SCS and DSC Print Compatibility
• 10, 12, 13.3, 15, and 16.67 Characters Per Inch
• 132 Columns at 10 CPI to 220 Columns at 16.7 CPI
• 3, 4, 6 and 8 Lines Per Inch
• Printing of Original Plus 5 Copies
• 8-Character LED Alphanumeric Display for Set Up Diagnostics
• Control Panel With Primary and Alternate Functions
• Bi-directional, Logic Seeking
• 7 x 8 Dot Matrix Draft Mode, 15 x 16 NLQ Mode
• Cut Sheet and Continuous Fanfold Forms Handling
• Demand Document Capability; Forms Tearoff Within 1″ of Last Printed Line
• Operator Replaceable 9-wire or 18-wire Snap-in Printhead
• Self-diagnostics on Power-up, Self-test Feature
• Horizontal and Vertical Tabs
• Variable Top and Bottom Margins
• Auto Line Feed
• 8 IPS Paper Slew Rate
• Audible Alarm
	• Cover Interlock Switch
	• Extended Data Stream (EDS) Support
	• 222-Character APL/Text
	• User Selectable or Program Controlled Parameters
	• Expanded Print
	
	PRINTER SPECIFIC HIGHLIGHTS
	• ITT 9305: 4- or 7-Color Support
	• ITT 9306: 4- or 7-Color With Single-plane or Triple-plane Program Symbol Set Support as Standard
	
	OPTIONS
	• Single-plane Program Symbol Set Graphics Option ITT 9303)
	• Single-plane and Triple-plane Symbol Set Graphics Option (ITT 9305)
	• Color and Triple-plane PSS Options (ITT 9304)
	• Triple Bin Automatic Sheet and Envelope Feeder
	• 200 cps or 400 cps Draft Mode Upgrade Option Including Single-plane and Triple-plane Program Symbol Set Support (ITT 9305)
	• Table-top Paper Receiving Tray
		• Printer Stand With Paper Basket
		• Document Tear Window
		
		TECHNICAL DATA
		Physical Characteristics
		Height: 8.7 in. (22.1 cm)
		Width: 23.0 in. (58.4 cm)
		Depth: 22.3 in. (56.6 cm)
		Weight: 40 lbs. (18.1 Kg)
		Reliability
		Duty Cycle: 25% duty cycle at 50% print density
		Spacing Characteristics
		Vertical: 3, 4, 6 and 8 lines per inch, selected from host or operator panel
		Horizontal: 10, 12, 13.3, 15, 16.7 CPI
		Paper Characteristics
		Type: Tractor feed, continuous fanfold form, from 1 to 6 parts, 3.0 to 15.0 in. (7.6 to 38.1 cm) wide
		Length: Standard top-of-forms spacing is set for 11 inches at 6 or 8 lines per inch. Maximum forms length is 127 lines.
		Width: Fanfold 3 to 15 in. (7.6 to 38.1 cm); cut sheet 4 to 12 in. (10.1 to 30.5 cm)
		Thickness: 0.020 in. (0.5 mm) maximum
			Power: 120 Watts
			Voltage: 90–128V or 180–256V
			Frequency: 47–63 Hz
			Heat Dissipation: 410 BTU/Hour
			Coax Specifications: RG62A/U Coax Cable
			Noise Levels: 60 dBA
			Temperature
			    Operating: 50°F to 104°F (10°C to 40°C)
			    Storage: -40°F to 151°F (-40°C to 66°C)
			Humidity
			    Operating: 10% to 90% RH (non-condensing)
			    Storage: 10% to 95% RH (non-condensing)
			Altitude: Up to 10,000 ft.
			Installation Method: Customer Set Up

PRINT SPEED	• ITT 9303—200 CPS (Characters Per Second) Draft Mode; 55 CPS NLQ (Near Letter Quality) • ITT 9304—400 CPS Draft Mode; 100 CPS near letter quality (NLQ) • ITT 9305—200 CPS Draft Mode; 100 CPS NLQ, 4- and 7-Color • ITT 9306—400 CPS Draft Mode; 100 CPS NLQ 4- and 7-Color	**LANGUAGES SUPPORTED**	• U.S. English • U.K. English • Austrian/German • Danish/Norwegian • Finnish/Swedish • French Azerty • Italian • Spanish • Spanish Speaking • Belgian • Canadian Bilingual • Swiss-German Extended • Swiss-French Extended

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TABLE 8. COURIER 9375 LASER PRINTER SPECIFICATIONS

FEATURES AND HIGHLIGHTS			
• High-speed Print at 15 Pages Per Minute • 300 x 300 Dots Per Inch (DPI) Resolution • High Resolution Graphics at 150 x 150 DPI for Full Page; 300 x 300 DPI for Half Page • Warm-up—90 seconds • Heavy Duty Cycle at 25,000 Pages Per Month	• Long-life Cycle at 1.5 Million Pages • Prints on Plain or Colored Paper, Labels, or Transparency Stock • Two 250-sheet Input Paper Cassettes • Accepts Cut Sheets of Letter-size, Legal-size, or A4 (International) Paper of 16 lb. to 24 lb. Weight • Prints on Forms and Letterheads	• Output Tray Capable of Accepting 500 Sheets of Face Down, Collated, Separated Output • Selectable Printing in Vertical or Horizontal Format (portrait or landscape mode) • 16-character LCD Operator's Display • 10, 12 and 16.7 Courier Resident Fonts with Accommodations for Two Optional Font Cartridges	• Diablo 630, HP LaserJet, and TI 855 Standard Emulators • TI 810, IBM Proprinter and LaserJet + /500 + Optional Emulator Cartridges • IBM 256 Character Set Support • Supports 7-bit and 8-bit Data Types, and Multiple Busy-status Methods (X-on/X-off) • 55 dBA Sound Levels During Operation without Utilizing a Sound Cover
TECHNICAL DATA			
Physical Characteristics Height: 17.5 in. (42.9 cm) Width: 21.5 in. (45.6 cm) Depth: 28.5 in. (69.8 cm) Weight: 88 lbs. (39.6 kg) (physical characteristics include paper trays and cartridges) **Reliability** Duty Cycle: 25,000 pages per month Machine Life: 1.5 million pages	**Paper Handling** Input Bins: Two; each holds 250-sheet cassette Output Bin: 500 sheet, face down Paper Jogger: For job separation Paper Weights: 16 lbs. to 24 lbs.	Sheet Types: Plain, letterhead, colored, transparencies, labels Sheet Sizes: Letter, legal, A4 **Fonts** Font Cartridge Slots: Two Font Selection: Manually from control panel or through software	Optional Fonts: Loaded from cartridge Font Capacity: Each cartridge can hold up to six fonts, depending on typeface and size On Board: Courier 10, 12, 16.7 pitch
POWER AND ENVIRONMENTAL SPECIFICATIONS			

Power: 1,000 watts (maximum)
Voltage: 110 or 120 VAC
Frequency: 48-62 Hz
Heat Dissipation: 3410 Btu/Hour (maximum)
Coax Specifications: RG62A/U Coax Cable
Noise Levels: 55 dBA
	Temperature
	  Operating: 50° F to 90° F (10° C to 32° C)
	  Storage: −20° F to 109° F (−29° C to 43° C)
	Humidity
	  Operating: 20% to 80% RH (noncondensing)
	  Storage: 5% to 95% RH (noncondensing)
		Altitude: 6,000 ft. maximum
		Installation Method: Customer Set Up	

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TABLE 9. COURIER 9291 A+ AND G+ MONOCHROME DISPLAYS SPECIFICATIONS

FEATURES AND HIGHLIGHTS	Display Enhancements	• Auto Blank	• Quiet, Positive Tactile
		• Adjustable Audible Alarm	Keystrokes
	• 14-inch, High Resolution Green, Amber, or Amber-Gold Display	• High-speed Cursor	• Home Row Indicators
		• Typamatic Keys	• Control Key Color Differentiation
		• Block/Underline Cursor	• Extendable Coiled Cable
	• Flicker-free Character Presentation	• Upper/Lowercase Display	• Keyboard Flexibility
	• Tilt/Swivel	• Single Stroke Clear	
	• Compact Ergonomic Design	• Optional Light Pen Attachment	**Optional Features**
		• Customer Installation	• Display Attached Printer
	Operational Enhancements	**Keyboard Enhancements**	• Light Pen
	• Rule Mode		**Product Support**
	• Contrast Control	• Slim-line, Adjustable Detachable Design	• Customer Set Up
	• Variable Field Underline	• Integrated Numeric Keypad	• Three Year On-site Warranty
	• Reveal Mode		
	• Row and Column Indicator		

TECHNICAL DATA **Physical Characteristics** **Monitor and Logic Base** Height: 14 in. (35.6 cm) Width: 13 in. (33.0 cm) Depth: 12 in. (30.5 cm) Weight: 19 lbs. (8.6 kg)	**Data Entry Keyboard (92-key)** Height: 2.2 in. (5.6 cm) Width: 16 in. (40.6 cm) Depth: 9 in. (22.9 cm) Weight: 3.8 lbs. (1.7 kg) **Typewriter Keyboard (110-key)** Height: 2.2 in. (5.6 cm) Width: 19.3 in. (49.0 cm)	Depth: 9 in. (22.9 cm) Weight: 5.5 lbs. (2.5 kg) **Typewriter Keyboard (122-key)** Height: 2.2 in. (5.6 cm) Width: 21.0 in. (53.3 cm) Depth: 8.0 in. (20.3 cm) Weight: 4.7 lbs. (2.1 kg)	**Adjustments** Tilt: 15° up, 5° down Swivel: 35° left or right Keyboard: 5° or 11.5° (92- and 110-key keyboard); 5°, 10°, or 15° (122-key keyboard) Keycap Height: 30 mm at home row	**Character Presentation** Character Cell: 9 x 14 Character Presentation: 7 x 8 **Cable Lengths** AC Power: 6.0 ft. standard Keyboard: 1.0 ft. coiled to 5.0 ft. extended

POWER AND ENVIRONMENTAL SPECIFICATIONS Power: 40 watts Voltage: 100-120 V ± 10%, or 200-240 V ± 10%	Frequency: 50 or 60 Hz Heat Dissipation: 136 Btu/Hour (maximum) Noise Levels: Less than 55 dBA at 1 meter Coax Specifications: RG62A/U Coax Cable	Temperature Operating: 50° F to 104° F (10° C to 40° C) Storage: −20° F to 158° F (−29° C to 70° C)	Humidity Operating: 10% to 90% RH (noncondensing) Storage: 5% to 95% RH (noncondensing) Altitude: Up to 8,000 ft.

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TABLE 10. COURIER 9291 1DG, 9291 IDA, 9291 1B/W MONOCHROME DISPLAYS

FEATURES AND HIGHLIGHTS	Display Enhancements	Operational Enhancements	• Record/Play/Pause—Chaining, Delay, Pause, Multi-Transmit, and Playback Speed Control	Keyboard Enhancements
	• 14-inch, High Resolution Green, Amber, or Black on White Monochrome Display • Flicker-free Character Presentation • Adjustable Brightness and Contrast Controls • Dual Purpose Connector • Tilt/Swivel • Security Keylock • Ergonomic Design	• Three User Selectable Screen Sizes for the 9291 2DG and 9291 2DA (1920, 2560, and 3440 characters) • Two User Selectable Screen Sizes for the 9291 2B/W (1920, 2560 characters) • Data Highlighting • Extended Highlighting • Auto Blank • Row and Column Indicator • Calculator with Export Capability • 3000 Keystroke Storage	• Rule Mode • Screen Trim • Adjustable Audible Alarm • Numeric Lock • Enhanced Setup Mode with Password Protect • Unit Serial Number Record • Extended Status Line • Customer Installation	• Typewriter, APL and Data Entry Layouts • 122-key Keyboard • Integrated Numeric Keypad • N-key Rollover **Optional Features** • Display Attached Printer • Light Pen **Product Support** • One or Three Year Warranty • On-site Exchange
TECHNICAL DATA	**Physical Characteristics** **Monitor and Logic Base** Height: 13.5 in. (34 cm) Width: 14 in. (36 cm) Depth: 14.5 in. (37 cm) Weight: 29 lb. (13 kg) **Keyboard** Height: 2.5 in. (6 cm) Width: 21.6 in. (55 cm) Depth: 9.3 in. (24 cm) Weight: 4.5 lb. (2 kg) **Adjustments** Tilt: 20° Swivel: 360° Keyboard: Two position angle **User Selectable Screen Sizes** Cell (9291 2DG, 9291 2DA) 12 x 16: 1920 characters 12 x 12: 2560 characters 12 x 10: 3440 characters Cell (9291 2B/W) 12 x 13: 1920 characters 12 x 10: 2560 characters Total Character Presentation (9291 2DG, 9291 2DA) 10 x 11: 1920 characters 10 x 8: 2560 characters	10 x 7: 3440 characters Total Character Presentation (9291 2B/W) 10 x 9: 1920 characters 10 x 7: 2560 characters **Cable Lengths** AC Power: 7.5 ft. (2.3 m) Keyboard: 6 ft. (1.8 m)		

POWER AND ENVIRONMENTAL SPECIFICATIONS
 	
Power: 45 Watts
Voltage: 115 VAC or 230 VAC ± 15%
Frequency: 50 or 60 Hz
Heat Dissipation: 154 BTU/Hour
Noise Levels: 0 dBA
	Cable Specifications:
	Dual Purpose Coax
	A/IBM Cabling System
	Temperature
	  Operating: 32°F to 105°F (0°C to 40°C)
	  Storage: −4°F to 150°F (−20°C to 65°C)
		Humidity
		  Operating: 10% to 90% RH (noncondensing)
		  Storage: 10% to 90% RH (noncondensing)
			Altitude
			  Operating: −450 to 10,000 ft.
			  Storage: Up to 40,000 ft.	

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TABLE 11. COURIER 9292 1C COLOR DISPLAY SPECIFICATIONS

FEATURES AND HIGHLIGHTS	Display Enhancements	Operational Enhancements	and Playback Speed Control	Keyboard Enhancements
	• 14-inch, High Resolution Seven-color Display • Flicker-free Character Presentation • Adjustable Brightness Control • Dual Purpose Connector • Tilt/Swivel • Security Keylock • Ergonomic Design	• Three User Selectable Screen Sizes (1920, 2560, and 3440 characters) • Dynamic Color Assignment • Data Highlighting • Extended Highlighting • Auto Blank • Row and Column Indicator • Calculator with Export Capability • 3000 Keystroke Storage • Record/Play/Pause—Chaining, Delay, Pause, Multi-Transmit,	• Rule Mode • Screen Trim • Adjustable Audible Alarm • Numeric Lock • Enhanced Set Up Mode with Password Protect • Unit Serial Number Record • Extended Status Line • Customer Installation	• Typewriter, APL and Data Entry Layouts • 122-key Keyboard • Integrated Numeric Keypad • N-key Rollover **Optional Features** • Display Attached Printer • Light Pen **Product Support** • One or Three Year Warranty • On-site Exchange

TECHNICAL DATA	Physical Characteristics	Adjustments	10 x 9: 2560 characters	
		Tilt: 20° Swivel: 360° Keyboard: Two position angle	10 x 7: 3440 characters	
	Monitor and Logic Base Height: 13.5 in. (34 cm) Width: 14 in. (36 cm) Depth: 14.5 in. (37 cm) Weight: 35 lbs. (16 kg)	**User Selectable Screen Sizes** Cell 12 x 16: 1920 characters 12 x 13: 2560 characters 12 x 10: 3440 characters	**Cable Lengths** AC Power: 7.5 ft. (2.3 m) Keyboard: 6 ft. (1.8 m)	
	Keyboard Height: 2.5 in. (6 cm) Width: 21.6 in. (55 cm) Depth: 9.3 in. (24 cm) Weight: 4.5 lbs. (2 kg)	Total Character Presentation 10 x 11: 1920 characters		

POWER AND ENVIRONMENTAL SPECIFICATIONS	Cable Specifications:	Humidity	Altitude	
Power: 95 Watts Voltage: 115 VAC or 230 VAC ± 15% Frequency: 50 or 60 Hz Heat Dissipation: 324 BTU/Hour Noise Levels: 0 dBA	Dual Purpose Coax A/IBM Cabling System Temperature Operating 32°F to 105°F (0°C to 40°C) Storage: −4°F to 150°F (−20°C to 65°C)	Operating: 10% to 90% RH (noncondensing) Storage: 10% to 90% RH (noncondensing)	Operating: −450 to 10,000 ft. Storage: Up to 40,000 ft.	

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TABLE 12. COURIER 9292 IF COLOR DISPLAY SPECIFICATIONS

FEATURES AND HIGHLIGHTS	Display Enhancements	Operational Enhancements	Playback Speed Control	Keyboard Enhancements
			• Rule Mode	
	• 14-inch, High Resolution Seven-color Display	• Four User Selectable Screen Sizes (1920, 2560, 3440, and 3564 characters)	• Screen Trim	• Typewriter, APL and Data Entry Layouts
			• Adjustable Audible Alarm	• 122-key Keyboard
	• Flicker-free Character Presentation	• Dynamic Color Assignment	• Numeric Lock	• Integrated Numeric Keypad
	• Adjustable Brightness Control	• Data Highlighting	• Enhanced Set Up Mode with Password Protect	• N-key Rollover
	• Dual Purpose Connector	• Extended Highlighting		
		• Auto Blank	• Unit Serial Number Record	**Optional Features**
	• Tilt/Swivel	• Row and Column Indicator	• Extended Status Line	
	• Security Keylock	• Calculator with Export Capability	• Customer Installation	• Display Attached Printer
	• Ergonomic Design			• Light Pen
		• 3000 Keystroke Storage		
		• Record/Play/Pause— Chaining, Delay, Multi-Transmit, and		**Product Support**
				• One or Three Year Warranty
				• On-site Exchange
TECHNICAL DATA	**Physical Characteristics**	Depth: 9.3 in. (24 cm) Weight: 4.5 lbs. (2 kg)	**User Selectable Screen Sizes** Cell	10 x 9: 2560 characters 10 x 7: 3440 characters 8 x 10: 3564 characters
	Monitor and Logic Base Height: 13.5 in. (34 cm) Width: 14 in. (36 cm) Depth: 14.5 in. (37 cm) Weight: 35 lbs. (16 kg)	**Adjustments** Tilt: 20° Swivel: 360° Keyboard: Two position angle	12 x 16: 1920 characters 12 x 13: 2560 characters 12 x 10: 3440 characters 10 x 14: 3564 characters Total Character Presentation 10 x 11: 1920 characters	**Cable Lengths** AC Power: 7.5 ft. (2.3 m) Keyboard: 6 ft. (1.8 m)
	Keyboard Height: 2.5 in. (6 cm) Width: 21.6 in. (55 cm)			
POWER AND ENVIRONMENTAL SPECIFICATIONS Power: 95 Watts Voltage: 115 VAC or 230 VAC ± 15% Frequency: 50 or 60 Hz Heat Dissipation: 324 BTU/Hour Noise Levels: 0 dBA	Cable Specifications: Dual Purpose Coax A/IBM Cabling System Temperature Operating: 32°F to 105°F (0°C to 40°C) Storage: −4°F to 150°F (−20°C to 65°C)	Humidity Operating: 10% to 90% RH (noncondensing) Storage: 10% to 90% RH (noncondensing)	Altitude Operating: −450 to 10,000 ft. Storage: Up to 40,000 ft.	

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TABLE 13. DEVICES SUPPORTED BY COURIER 9474-400 SERIES CONTROLLERS

- Any 3270-type display or printer that is IBM Category A coax-compatible including Courier's IBM coax-compatible displays and printers
- XTRA Personal Computers and other IBM or IBM compatible personal computers using 3270 coax emulation boards
- Optional parallel printer support (9474-48XR only)
- Optional Asynchronous Communications Support Feature (ACS) which provides 3270 emulation for selected ASCII devices (9474-401L, 9474-40XR). This feature also supports an ASCII display, printer or host connection via a serial port on the 9474-48XR Controllers.
- 9499 Coax Multiplexer is supported on all 9474-400 Series Controllers except the 9474-48XR Controllers
- Optional token-ring gateway (9474-401L only).
- Optional dual host support (9474-401R only).

TABLE 14. ASYNCHRONOUS DEVICES ATTACHABLE THROUGH ASYNCHRONOUS COMMUNICATIONS

- XTRA Personal Computers and other IBM compatible personal computers with asynchronous adapters
- Qume QVT; Digital Equipment Corporation VT100; Lear Siegler ADM3A displays
- Qume; Epson FX80 and FX100; Okidata 82A, 83, 92, and 93; NEC 3515 printers (serial interface required)

TABLE 15. ASYNCHRONOUS COMMUNICATIONS SUPPORT (ACS) STANDARD FEATURES

- Personal computer file transfer in MVS/TSO, VM/CMS or CICS environments
- Personal computer screen copy
- Line speeds of 1200 to 9600 bps
- Autoanswer modems
- Keyboard functions similar to 3278 displays
- 3270 operator information area

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TABLE 16. COURIER 9474-400 SERIES CONTROLLERS FEATURES AND SPECS

FEATURES AND HIGHLIGHTS

- APL/Text Control
- ASCII Host Support
- Automatic Session Recovery (SDLC)
- Between Bracket Printer Sharing (SDLC)
- Concurrent ASCII and LAN Gateway Support
- Copy (Print Key Function)
- Customization for any 3270 Keyboard Layout
- Courier 9499 and IBM 3299 Coax Multiplexer Support
- DSL Support: 3179G, 3192G, 3193, and 3290
- Decompression of Programmed Symbols
- Dual Host Support: Remote SNA/Remote SNA, Remote SNA/Remote High Speed SNA and Remote SNA/Remote BSC (9474-401R only)
- Dual Purpose BNC Connectors (coax or twisted pair)
- Dual Session Support
- Expanded Operator Information Area Support

- Extended Color
- Extended Highlighting
- Host Loadable Printer Authorization Matrix
- Host Notification of Terminal Power Status (SDLC)
- IBM Category A Coax Device Support
- IBM Host Software Compatibility
- IBM 3180 Native Support
- Intel 80286 Processor on the 9474-401L, 9474-40XR, and 9474-401HS; Intel 80186 Processor on the 9474-48XR
- Intelligent Printer Data Stream (IPDS) Support
- Keyboard Definition Utility (KDU)
- Light Pen Support
- Magnetic Stripe Reader Support
- Operator Entry Assist
- Operator Type-ahead Support
- Pacing of Inbound Message Traffic (SDLC)
- Power On/Off Status (SNA)

- RTM/Alert Cut and DFT
- SCS Printer Support (SDLC)
- SNA and Non-SNA Operation for Local Controllers
- SNA/SDLC and BSC Operation for Remote Controllers
- Second 3.5-inch Diskette Drive (9474-401L and 9474-40XR)
- Security Keylock
- Structured Field and Attribute Processing
- Token-Ring Gateway (9474-401L only)
- Token-Ring Support (9474-403R and 9474-483R)
- 1.0 MByte and 512 KByte Memory Upgrades to 3.5 MBytes (9474-401L and 9474-40XR)
- 1.0 MByte Memory (9474-48XR)
- 1.5 MByte Memory (9474-401L and 9474-401R)
- 3.5-inch High Density (1.44 MByte) Diskette Drive
- 3270 Personal Computer File Transfer and MLU Support
- 3270 Operator Information Area
- 3289 Text Print Control

TECHNICAL DATA

Local Controller (9474-401L)	Remote Controller (9474-40xR, 9474-401HS)	Remote Controller (9474-48xR)	Coax Multiplexer (9499)
Height: 26.5 in. (66 cm)	Height: 26.5 in. (66 cm)	Height: 3.93 in. (10 cm)	Height: 2.5 in. (6.35 cm)
Width: 14 in. (36 cm)	Width: 14 in. (36 cm)	Width: 17.64 in. (45 cm)	Width: 12.25 in. (31.12 cm)
Depth: 22 in. (56 cm)	Depth: 22 in. (56 cm)	Depth: 12.64 in. (32 cm)	Depth: 7.4 in. (18.8 cm)
Weight: 99 lbs. (40.82 kg)	Weight: 99 lbs. (40.82 kg)	Weight: 12 lbs. (5 kg)	Weight: 4 lbs. (1.8 kg)

POWER AND ENVIRONMENTAL SPECIFICATIONS

Power and Voltage: 9474-401L—149 Watts @ 120 VAC, 146 Watts @ 208 VAC, 175 Watts @ 220 VAC; 9474-40xR, 9474-401HS—149 Watts @ 120 VAC, 175 Watts @ 220 VAC; 9474-48xR—40 Watts @ 120 VAC, 40 Watts @ 220 VAC; 9499—10.2 Watts @ 120-230V

Frequency: 50-60 Hz (all models) Heat Dissipation: 9474-401L, 9474-40XR, 9474-401HS—292 Watts, 995 BTU/Hour (max); 9474-48xR—40 Watts, 136 BTU/Hour (max); 9499—34 BTU/Hour

Noise Levels: Less than 46 dBA (all models) Coax Specifications: RG62A/U Coax Cable (all models) Temperature Operating: 40°F to 105°F (4.4°C to 40.5°C) —all models Storage: 0°F to 140°F (−17.8°C to 60°C)— 9474-401L, 9474-40XR, 9474-401HS; 0°F to 120°F (−17.8°C to 48°C)—9474-48XR and 9499

Humidity Operating: 8% to 80% (noncondensing)— 9474-401L, 9474-40XR, 9474-48XR, 9474-401HS; 5% to 95% (non-condensing)—9499 Storage: 10% to 90% (noncondensing)— all models Altitude Operating: Up to 10,500 ft. (all models) Storage: Up to 40,000 ft. (all models)

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TABLE 17. COURIER 9324 MATRIX PRINTER SPECIFICATIONS

FEATURES AND HIGHLIGHTS			OPTIONS
• 300 cps Print Rate at 10 cpi, 132 Column, Draft Quality Mode (9324-01) • 400 cps Print Rate at 10 cpi, 132 Column, Draft Quality Mode (9324-03) • Operator Replaceable 9- and 18-Wire Printheads, 1.8 KHz Frequency Response, 12 Mil Wire Diameter • Draft, Data Processing and Near Letter Quality Print Modes • Co-resident Cut Sheet, Fanfold, Demand Document Forms Handling • Printing of Original Plus 5 Copies • Automatic Forms Park (Fanfold Forms)	• IBM Coaxial Connectivity to Courier 9474 Controllers, and to IBM 3174, 3274, 3276, 4321/31, 4361, and 3694 controllers • IBM 3287-2/4224 Emulation • SCS/DSC Print Compatibility • Universal Power Supply (110/220 VAC, 50/60 Hz user selectable) • Operator Selectable Audible Alarm • Cover Interlock Protection • 16-Digit Liquid Crystal Display • Control Panel • Power-up Diagnostics	• Operator Self Test Mode for Forms Alignment/Fault Detection • Extensive User Selectable Parameter Selection • 14 Operator Selectable Font Styles Including APL • 24 Operator Selectable Country Character Sets • Clean Hands Cartridge Ribbon with 10 Million Character Print • Six Month On-site Warranty • Customer Installation/Operation	• 64K or 512K IBM 4224 Compatible Intelligent Printer Data Stream Text and Graphics Upgrade (factory installed or field upgrade) • 4-8 Color Upgrade, Allows Use of One-inch Black Ribbons with a 20 Million Character Life (factory installed or field upgrade) • Automatic Sheetfeeder with Envelope Capability • Printer Stand • One Year On-site Warranty
TECHNICAL DATA	**Physical Characteristics** Height: 8.0 in. (20.3 cm) Width: 23.0 in. (58.4 cm) Depth: 18.2 in. (38.6 cm) Weight: 55 lbs. (24.8 kg) **Reliability** Duty cycle: 4000 hours MTBF at 25% duty cycle at 50% print density (printhead and ribbon cartridge excluded) Printhead: 9-wire—125 million characters; 18-wire—250 million characters Black Ribbon: ½-inch—10 million characters; 1-inch—20 million characters Color Ribbon: 1-inch color process—3.3 million characters; 1-inch color primary—2.7 million characters	**Printing Characteristics** Print Speed (13.2-inch line at 10 CPI): 9324-01—300 CPS draft quality text, 150 CPS data processing quality text, 75 CPS near letter quality text; 9324-03—400 CPS draft quality text, 200 CPS data processing quality text, 150 CPS near letter quality text Raster Graphics Speed (13.2-inch line at 144 x 144 dots per inch): 9324-01—27 lines per minute (LPM); 9324-03—54 LPM Paper Slew Rate: 10 inches per second (IPS) Line Feed Time: 50 msec at 6 lines per inch (LPI) Color Shift Time: 26 msec (color option installed)	**Paper Characteristics** Continuous Forms Width: 3 to 15 in. Length: 3 to 15.5 in. Weight: Single part—15 to 24 lb. paper; Multipart—12 to 15 lb. paper with 6 to 8 lb. carbon Thickness: 0.003 in. minimum; 0.0204 in. maximum **Single Document** Width: 3 to 13 in. Length: 3 to 15.5 in. Weight: Single part—15 to 24 lb. paper; Multipart—12 to 15 lb. paper with 6 to 8 lb. carbon Thickness: 0.003 in. minimum; 0.0204 in. maximum	**Spacing Characteristics** Vertical Spacing: 3, 4, 6 8, 12 lpi; 6 or 8 lpi operator panel selectable Vertical Increments: Sprocket feed—240 half steps per inch; friction feed—216 half steps per inch Character Pitch: 10, 12, 15, 17.1 CPI; proportional and double width for all pitches

POWER AND ENVIRONMENTAL SPECIFICATIONS	Power: 88 Watts maximum standby; 175 Watts maximum operating
	
	Voltage: 98 to 132 VAC, 48 to 65 Hz; 184 to 264 VAC, 48 to 65 Hz
	Heat Dissipation: 300 BTU/Hour (standby); 597 BTU/Hour (operating)
		Coax Specifications: RG62A/U Type "A"
		Noise Level: 55 dBA
		Temperature
		   Operating: 50°F to 104°F (10°C to 40°C)
		   Storage: −40°F to 151°F (−40°C to 66°C)
			Humidity
			   Operating: 13% to 83% RH (noncondensing)
			   Storage: 10% to 90% RH (noncondensing)
				Altitude: Up to 10,000 ft.
				Installation Method: Customer Set Up

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TABLE 18. COURIER 9345 and 9347 SHUTTLE MATRIX LINE PRINTERS SPECS

FEATURES AND HIGHLIGHTS				
	• 400 lpm Draft Text Mode, 82 lpm Near Letter Quality Text Mode (9345) • 800 lpm Draft Text Mode, 165 lpm Near Letter Quality Text Mode (9347) • IBM Coax-compatibility (attaches to IBM 3174, 3274, 3276) • IBM Equivalent Operator's Panel • IBM 3262-3/13 Emulation • Supports BSC and SNA/SDLC (LU-1, LU-3) Protocol	• OCR "A" and OCR "B" Fonts • Fully Enclosed 55 dBA Noise-level Cabinet • Dual Drive with Two Sets of 6-pin Tractors for Paper Alignment • Bottom Feed Paper Path with Paper Storage in Pedestal • Graphic Resolutions of 60 to 140 Dots per Inch (dpi) Horizontally and 72/144 dpi Vertically • Character Sets—96 Character US EBCDIC Plus 14 National Sets, IBM PC Graphic Set, Greek/Math	• Character Styles—Data Processing, Gothic Near Letter Quality, and Optional Courier and Italic Near Letter Quality • Bold, Underline, Superscript and Subscript Print Modes • Line Drawing and Block Graphics Characters • 4K Buffer • Paper Low and Optional Paper Motion Detector	• 16 Character LCD Display, 8 LED Indicators, 20 Position Sealed Membrane Keypad • Black Inked Nylon Ribbon Cartridge with Reinker (approximate life of 50 million characters) • Built-in Diagnostics • Optional Bar Code Capability • Customer Installation/Operation

TECHNICAL DATA				
	Physical Characteristics Height: 47 in. (119 cm) Width: 29 in. (74 cm) Depth: 25 in. (64 cm) Weight: 285 lbs. (128 kg) **Reliability** Duty Cycle: 6000 hours mean time between failure at 25% duty cycle	**Spacing Characteristics** Vertical: 3, 4, 6, 8 lines per inch plus n/144 in. Horizontal: 10, 12, 13.3, 16.7 characters per inch Character Expansion: 2X, 4X, 8X horizontal and vertical	**Paper Characteristics** Width: 3 to 16.54 in. Printing: Original plus 5 copies Paper Slew Rate: 20 ips inches per second (ips) Line Feed: 11 milliseconds at 6 lines per inch (LPI)	

POWER AND ENVIRONMENTAL SPECIFICATIONS				

	Power: 400 Watts
	Voltage: 100−240 VAC + 10%, −15%
	Frequency: 50/60 Hz ± 1 Hz
	Heat Dissipation: 1364 BTU/Hour
		Noise Level: 60 dBA
		Temperature
		  Operating: 39°F to 104°F (4°C to 40°C)
		  Storage: −40°F to 160°F (−40°C to 71°C)
			Humidity
			  Operating: 15% to 90% RH (noncondensing)
			  Storage: 5% to 95% RH (noncondensing)
			Altitude: Up to 12,000 ft.
			Installation Method: Customer Set Up	

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TABLE 19. COURIER 9376 LASER PRINTER SPECS

FEATURE AND HIGHLIGHTS			
• High-speed Print at 15 Pages Per Minute • In 3270 mode, the Operator's Panel Emulates the IBM 3287 Operator's Panel • Support for Hex Transparency Mode • Support for Hex Dump Mode • Physical Buffer Set at Either 2 or 4K Bytes • Logical Buffer Set at Either 960, 1920, 2560, 3440, or 3564 • Support for Form Feed Before or After Local Print • 300 x 300 Dots Per Inch (dpi) Resolution • High Resolution Graphics at 150 x 150 DPI for Full Page; 300 x 300 DPI for Half Page	• Fast Warm-up (90 seconds) • Heavy Duty Cycle at 25,000 Pages Per Month • Long-life Cycle at 1.5 Million Pages • Prints on Plain or Colored Paper, Labels, or Transparency Stock • Two 250-sheet Input Paper Cassettes • Accepts Cut Sheets of Letter-size, Legal-size, or A4 (International) Paper of 16 lb. to 24 lb. Weight	• Prints on Forms and Letterheads • Output Tray Capable of Accepting 500 Sheets of Face Down, Collated, Separated Output • Selectable Printing in Vertical or Horizontal Format (portrait or landscape mode) • Bright and Legible 16-character LCD Operator's Display • 10, 12 and 16.7 Courier Resident Fonts with Accommodations for Two Optional Font Cartridges	• IBM 256 Character Set Support • Supports 7-bit and 8-bit Data Types, and Multiple Busy-status Methods (X-on/X-off) • 55 dBA Sound Levels During Operation Without Utilizing a Sound Cover
TECHNICAL DATA	**Physical Characteristics** Height: 17.5 in. (42.9 cm) Width: 21.5 in. (45.6 cm) Depth: 28.5 in. (69.8 cm) Weight: 88 lbs. (39.6 kg) (physical characteristics include paper trays and cartridges) **Reliability** Duty Cycle: 25,000 pages per month Machine Life: 1.5 million pages	**Paper Handling** Input Bins: Two; each holds 250-sheet cassette Output Bin: 500 sheet, face down Paper Jogger: For job separation Paper Weights: 16 lb. to 24 lb. Sheet Types: Plain, letterhead, colored, transparencies, labels Sheet Sizes: Letter, legal, A4	**Fonts** Font Cartridge Slots: Two Font Selection: Manually from control panel or through software Optional Fonts: Loaded from cartridge	Font Capacity: Each cartridge can hold up to six fonts, depending on typeface and size On Board: Courier 10, 12, 16.7 pitch

POWER AND ENVIRONMENTAL SPECIFICATIONS	Power: 1,000 Watts (maximum)
	Voltage: 110 or 120 VAC
	Frequency: 48-62 Hz
	Heat Dissipation: 3410 BTU/Hour (maximum)
	Coax Specifications: RG62A/U Coax Cable
		Noise Levels: 55 dBA
		Temperature
		  Operating: 50°F to 90°F (10°C to 32°C)
		  Storage: −20°F to 109°F (−29°C to 43°C)
			Humidity
			  Operating: 20% to 80% RH (noncondensing)
			  Storage: 5% to 95% RH (noncondensing)
			Altitude: 6,000 ft. maximum
			Installation Method: Customer Set Up	