

BY JOHN V. LOMBARDI
REVIEW BOARD

Cracking the market for high-performance microcomputers in the IBM PC AT class requires IBM PC compatibility plus either extra features or lower prices. The Texas Instruments Business Pro is an excellent example of a machine attempting to compete by offering extra features. Based on the now-familiar 80286 microprocessor, this computer provides an elegant, powerful, and flexible alternative to the IBM PC AT and its clones.

SETUP: The machine we received came ready to plug in and go. Consisting of a detachable keyboard, a high-quality color monitor on an adjustable stand, and a system unit designed to stand upright on a desk-high pedestal, the Business Pro can be up and running in about 10 minutes. The system unit, including disk drives and tape backup, plugs into a single wall socket. The monitor's power cord and video cable plug into the system box, and the keyboard plugs into the monitor stand.

The cables are easy to connect, and although it is possible to plug the keyboard erroneously into the monitor socket on the system box, doing so won't hurt anything. The installation instructions are well-written and perfectly clear.

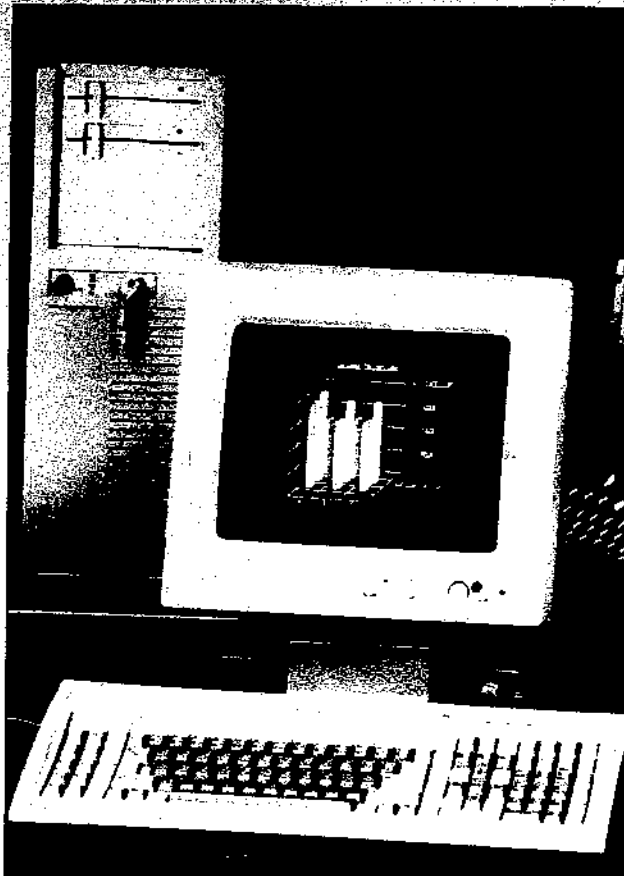
FEATURES: The Business Pro can be expensive if you buy it with all the options. The basic Business Pro comes with a single 1.2-megabyte high-density floppy disk drive, 512K of memory, a keyboard, and serial and parallel ports for \$3,995, a price that does not include a monitor or operating system.

The unit we tested included every option in the book, and came to a list price of more than \$12,000 (for items bought separately). Features included two floppy disk drives (an IBM PC standard 360K drive that costs an extra \$400 and a PC AT-compatible high-density 1.2-megabyte floppy drive); a 40-megabyte CDC hard disk drive (\$3,495); a 60-megabyte tape backup unit (\$1,995); and 1 megabyte of memory (\$1,250).

The main board can hold more than 3.64 megabytes of memory before using expansion slots; this is a big plus in the Business Pro's favor, since few personal computers can fit even 512K of memory on the main board. The Business Pro also offers standard IBM PC graphics on a 13-inch color monitor (\$795).

What sets this machine apart from others in its class is its optional dual compatibility. Not only does it mimic the IBM PC AT, but with the proper add-on equipment a simple command causes the machine to perform like the TI Professional, a non-PC-compatible MS-DOS system.

In TI mode the screen resolution (720-by-300 pixels) and wide range of colors available (eight distinct shades) provide



TI Offers Expensive, Excellent AT Clone

high quality graphics than what is possible on an IBM PC, but which cause IBM PC incompatibility. In IBM PC mode the display can act as either a color or standard IBM monochrome monitor.

The TI mode also changes the behavior of the keyboard. Although the keyboard is for the most part IBM PC compatible, it includes extra keys; some are used for cursor movement control and some for TI-mode-specific functions.

The purpose of all this, of course, is to allow the machine to run two different "families" of software: software specifically written for TI Professional hardware specifications as well as programs from the large and constantly expanding base of IBM PC-compatible packages. To achieve this

duality the computer needs to have a separate video controller board for each mode; add \$495 to the system's base price if you want the TI controller board.

This review will focus on the Business Pro's performance as an IBM PC AT compatible.

The machine has two speeds, as is also the case with IBM PC AT clones like the Compaq Deskpro 286. The TI's high-speed mode, called Turbo, is rated at 7.1 on the Norton utilities, while the regular mode clocks in at an IBM PC AT standard of 5.7. The Business Pro has an IBM PC-compatible serial port built in, along with a standard parallel printer port.

Obviously designed to work in offices where network connections and communi-

The TI Business Pro offers IBM PC AT and optional TI Professional compatibility, but at a price.

cation with mainframes and external databases are important, the Business Pro can handle up to an amazing 14 expansion slots. There is also room in the system box for two half-height floppy disks, one half-height hard disk, one half-height tape backup unit, and one full-height or two additional half-height hard disks.

The system box isn't much larger than a PC AT, and since it rests on its side on the floor, little desk space is used up. Our machine had five of the 14 slots occupied by various controllers: floppy disk drive, tape, half-height Winchester, PC AT video, and TI video controllers.

Three of the system's expansion slots are of the 8-bit bus variety, which are compatible with IBM PC expansion boards; the other slots accept PC AT-compatible 16-bit bus expansion boards. Of the PC AT-compatible slots, five are short slots and six are standard long slots.

The Business Pro's MS-DOS 3.0 operating system costs \$95 and includes a tape backup utility. Unlike practically every other microcomputer we've seen, the system does not include any programming languages, not even Basic. You can buy Basic separately for an extra \$100.

MS-DOS, Version 3.0 is the standard operating system for IBM PC AT-compatible machines, and the TI variant has the same characteristics as its counterparts. However, the "mode" command has been expanded to allow switching between TI and IBM PC AT modes, and between Turbo high-speed and standard-speed modes.

Although the machine is apparently network-ready (since the rather nice diagnostic program includes a number of checks related to various network connections), Texas Instruments does not yet offer MS-DOS 3.1, the network-capable version of MS-DOS.

The thorough diagnostic disks included with the system test both IBM PC AT and TI modes. The machine comes with dual read-only memory (ROM) chips; one handles the machine's hardware when in the TI mode, the other is the widely used BIOS (Basic Input/Output System) from Phoenix Software Associates Ltd. that provides the ROM emulation necessary for mimicking the PC AT's copyrighted ROMs.

The absence of Basic is an unfortunate omission in an otherwise very complete set of fundamental software. While a user could certainly purchase a version of Basic to run on this machine, the market has come to expect such software to be supplied with microcomputers in this class.

When you use a 40-megabyte hard disk, backing up files becomes a significant concern. With the optional tape backup system, the TI Business Pro package includes an easy-to-use software package called Pulse Junior, which comprises a set of streaming tape utilities for the 60-megabyte tape backup unit. This compre-

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John V. Lombardi is a professor of history and author of five books. He has been working with computers since 1967.

security offers an outstanding array of backup and restore features, including file, file image, partial image, and changed file functions.

The image backup and restore features are fast: we backed up 40 megabytes in just over six minutes, and restored them in about the same time. The image restore identifies bad sectors on the target hard disk and permits restoration of an image backup to a different hard disk — an important feature.

EASE OF USE: The TI Business Pro is no harder or easier to use than other ma-

What sets the Business Pro apart from others in its class is its optional dual compatibility.

chines in its class, although the existence of two display options and two keyboard styles can cause some confusion.

Fortunately, the excellent manuals are very clear on the differences and possible conflicts between the two modes. The keyboard has a nice light touch and the screen has good color.

Text in the IBM color 80-column mode is reasonably clear, though the characters are not as sharp as we've seen on other monitors of this kind. The lower case *ö*, for example, has what seems to our eye an

unusual and distracting shape.

Some users of this machine commented that the screen characters caused eyestrain, although such judgments can be quite subjective. In the IBM monochrome mode, the characters were clearer and the display speed faster, but in our opinion the character formation and display did not meet the standards set by true IBM monochrome monitors.

PERFORMANCE: In general, the TI Business Pro is an outstanding performer. The machine does everything you would expect of an PC AT clone and more. It runs standard software such as Lotus' 1-2-3, Dbase III, and Sidekick, and like the PC AT itself chokes on Microsoft's Flight Simulator. It can also run programs that take advantage of TI-specific hardware features when running in the optional TI Professional emulator mode.

Although there are some minor differences between the TI's keyboard and screen display and IBM's standards, such differences are fully documented and cosmetic rather than functional. The hard disk, floppy disks, and tape unit work well, delivering the kind of speed and capability we have come to expect of high-performance PC AT compatibles.

Informal benchmarks using real world examples (such as Dbase III and compiled Basic) demonstrate speed virtually identical to that achieved on an IBM PC AT. In Turbo mode, the speeds are somewhat faster, although as one would expect, the improvement depends greatly on the amount of disk access being performed, with disk-intensive programs showing less speed improvement than processor-intensive tasks.

DOCUMENTATION: All the materials provided with this machine adhere to a high standard of clarity, completeness, and accuracy. Setup, operating system, diagnostics, tape backup, and the bundled application package are fully documented. The tape backup utility has very helpful on-line messages, menus, and screens.

The MS-DOS operating system is well-documented in the user manual, which takes special pains to clarify the differences between TI mode and PC AT mode and to discuss issues of possible incompatibility. Although a technical manual would have been a nice touch, few microcomputers come supplied with such materials anymore.

SERVICEABILITY: The TI Business Pro is a solidly built machine; the keyboard, monitor, and system unit all show signs of strength and durability. While it is too early to judge the system's long-term serviceability, all evidence seems to indicate reliability.

The system unit comes apart easily for service, although access to the system board requires some hardware disassembly. Instructions for installation and removal of system and accessory boards are excellent. The machine is guaranteed for one year by TI, which maintains service facilities.

VALUE: The TI Business Pro has excellent capabilities and some unique options. Network-ready and capable of serving as either a multiuser machine or a link to mainframes, the TI Business Pro has considerable room for growth. The optional TI compatibility may be worth the extra cost and the possible risk of incompatibility with future IBM software releases, especially in offices using other Texas Instrument microcomputers. For such users, the value offered is satisfactory even at the rather hefty price.

The TI Business Pro is a solid, well-built machine. Complete with dual speed, screen, and keyboard configurations, the microcomputer would be an ideal choice where expansion, network capability, and TI compatibility are important concerns. The absence of a bundled Basic programming language is a small disadvantage. This is a quality machine, although expensive.

Kyocera Offers Modem Bundled With Software From Microsoft

BY SHERWIN LEVINSON
REVIEW BOARD

Is the Kyocera KM 1200S modem just a me-too product in a market already saturated with 1,200 bit-per-second (bps) modems? In a word, no. The KM 1200S is a fine product in its own right. Bundled with Microsoft's Access telecommunications software, telephone cable, and fully shielded RS-232 cable, it also provides everything you need to start communicating quickly and easily.

Kyocera is not exactly a familiar name to most people, but its products are various and can be found in many homes and offices buried under someone else's label. Kyocera is a major original equipment manufacturer (OEM) supplier that makes products ranging from high-performance ceramics to IBM PC-compatible desktop computers. Some of its best-known products include the laptop computers sold as the Radio Shack Model 100, the NEC PC-8201A, and the Olivetti M10.

Kyocera has now decided to come out of the closet, and the KM 1200S modem is one of the first products to be marketed under the Kyocera name. The 1,200-bps modem comes bundled with Microsoft's powerful new telecommunications program, Access, and provides excellent value and ease of use for anyone new to the on-line world.

Two versions of the KM 1200 are available: a stand-alone version and an internal unit. Both models can be purchased either with or without Access.

Because Kyocera makes much of the KM 1200S-Access combination in its marketing campaign, we will comment in appropriate places on how and what Access contributes to the modem's performance; however, since the modem is also available without Access, the report card will reflect our rating of the hardware alone. (For a complete review of Access, see "Microsoft Access: Powerful and Easy," October 7, 1985.)

At roughly 1 1/4 by 6 1/2 by 10 inches, the KM 1200S is about the same size as other modems in its class. The six status light emitting diodes (LED) are easily visible and the power switch is conveniently located on the right side. Four switches on the back of the modem allow you to preset the most important aspects of modem configuration. The external power supply plugs directly into an AC outlet and is similar to those of other modems in its class.

SETUP: Setup is especially easy due to excellent, well-illustrated instructions and the inclusion of all necessary cables and software in a single package. The modem's analog loopback test mode makes it easy to check installation. In the modem's "test" mode, modem output is connected directly to the input, making it possible to test all aspects of your system except the phone line itself. This feature is useful for isolating problems.

Software installation is about as easy as it could possibly be, since Access provides an excellent installation program and custom menus combined with a "learn" mode. The Access package includes special

offers for several on-line services and can easily prepare automatic log-on sequences for these services with a minimum of user input.

EASE OF USE: The KM 1200S and Access are a well-matched pair. Connecting to an on-line service supported by an Access custom menu requires no more than selecting Connect (which is the default menu selection) and choosing a service from the telephone book. Connecting to other services not listed on the menu is just as easy; if you turn on the learn mode, the program memorizes each log-on sequence after you manually key it in the first time, so that the sequence can be completed automatically the next time you access that particular service.

The KM 1200S modem also "responds" to various situations — a feature not found in many other modem products. You are notified when a busy signal is detected, when dialing is aborted, and when the phone line is switched from modem to telephone set.

Unfortunately, Access does not take advantage of all these features. For example, it doesn't recognize the modem's busy message, but instead waits the fully allotted time for a connection.

There are also several features not provided by KM 1200S and Access that, although not essential, are available in some other products. The modem does not provide any way to control speaker volume; the speaker can only be turned off altogether. There is also no visual indication of on-line status on the modem. A "carrier detect" LED would be a welcome addition to the set of status indicators, especially for use when the speaker is turned off.

PERFORMANCE: All told, we used the KM 1200S for over 50 hours, signing onto such services as Dow Jones News/

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REPORT CARD	
TI BUSINESS PRO	
	Unacceptable Poor Satisfactory Very Good Excellent
Performance	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Documentation	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Setup	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Serviceability	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Value	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

SUMMARY

The TI Business Pro is a solid, well-built machine that provides compatibility with both Texas Instruments and IBM PC AT hardware and software. While quite expensive with all its options, the machine is an ideal choice where expansion, network capability, and TI compatibility are important concerns.

PRODUCT DETAILS

List price, \$3,995 (base model with 1.2-megabyte floppy disk drive, 512K memory, parallel and serial ports, keyboard). Model tested (\$12,070) adds 360K floppy disk drive, 40-megabyte hard disk drive, 14 expansion slots, 1-megabyte memory, 60-megabyte tape backup unit color monitor, TI mode controller, MS-DOS. Texas Instruments Inc., Data Systems Group, P.O. Box 809063, Dallas, TX 75380 (800) 527-3500.

Infoworld	
REPORT CARD	
KYOCERA KM 1200S	
	Unacceptable Poor Satisfactory Very Good Excellent
Performance	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Documentation	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Setup	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Serviceability	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
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SUMMARY

The Kyocera KM 1200S modem is a quality product, appropriate for telecommunication novices and veterans alike. Bundled with Microsoft's powerful and easy-to-use Access program and the cables necessary for use with the IBM PC and compatibles, this package represents a very good value.

PRODUCT DETAILS

List price, \$665. Model tested available for any computer with RS-232 port. Includes cable, phone cord, Microsoft Access software (which requires IBM PC or compatible using MS-DOS 2.0 or later, 256K memory, two floppy disk drives). Kyocera International Inc., 10050 N. Wolfe, Suite 266, Cupertino, CA 95014; (800) 235-1222.

Sherwin Levinson has been working with computers for more than 20 years, specializing in computer conferencing, telecommunications, and user support.