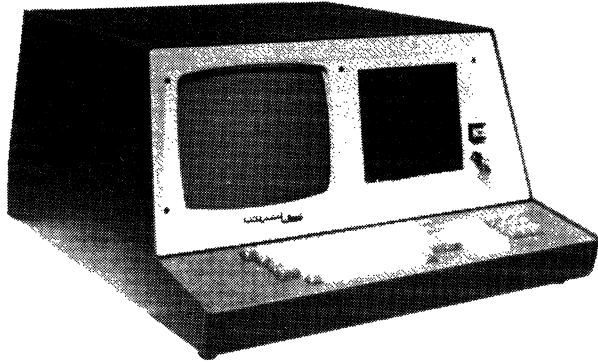


Tano Outpost 11



MANAGEMENT SUMMARY

The Outpost 11 is a desktop stand-alone microcomputer designed to handle batch or interactive data communications, as well as off-line data storage and processing, program development, and automation control. An off-spring of Tano's automation and control systems product lines, the Outpost 11 features heavy-duty industrial/military calibre components. The terminal is controlled by an MC6800 microprocessor and provides 32K to 64K bytes of user memory. Components consist of a 1920-character CRT, a single or dual minidiskette drive, and a full ASCII keyboard, all integrated into a single cabinet. A separately-cabineted standard diskette drive can be substituted for the minidiskette drive(s).

User programs are created in extended ANSI BASIC via a BASIC interpreter. The diskette-resident interpreter requires 20K bytes of user memory. Programs can be keyed to diskette for local storage or transmitted to the host; at execution time, programs are loaded from either the diskette via a firmware bootstrap loader or downline from the host. Tano also provides COPS 11, a generalized utility package, and OPX, a system exerciser and diagnostic tool, for use with the Outpost 11. The BASIC interpreter, COPS 11, and OPX software are bundled into the basic system price.

In addition, Tano makes available for separate purchase a number of systems and applications software products provided for the Outpost 11 by the Great Plains Computer Company, Inc., a software and hardware distributor in Idaho Falls, Idaho.

Up to four serial interfaces can be provided for connection of data communications lines and/or customer-supplied peripherals, such as an additional CRT or a printer.

Originally marketed to end-users on a factory-direct sale basis, the Outpost 11 is currently available to end-users through a nationwide network of dealers, or through Eclectic Systems Corp., a wholly-owned subsidiary of

A stand-alone user-programmable terminal system that supports interactive or batch data communications.

The system includes an MC6800 microprocessor, a 12-inch CRT display, a full ASCII keyboard, and a single or dual integral minidiskette drive or a separately-cabineted single or dual 8-inch diskette drive. User memory capacity can be 32K, 48K, or 64K bytes. Up to four serial ports can be provided for attachment of data communications lines or user-supplied I/O devices.

A full complement of software support is available, including a diskette-based operating system, a wide variety of systems utilities, a diagnostic monitor, several versions of BASIC interpreters, a terminal communications package, and business applications programs.

A typical system, consisting of a 32K byte RAM, a 12-inch CRT, a keyboard, dual single-sided minidiskette drives, and a communications port, is priced at about \$3,500.

CHARACTERISTICS

VENDOR: Tano Corporation, 4301 Poche Court West, New Orleans, LA 70189. Telephone (504) 254-3500.

DATE OF ANNOUNCEMENT: August 1978.

DATE OF FIRST DELIVERY: August 1978.

NUMBER DELIVERED TO DATE: 300.

SERVICED BY: Eclectic Systems Corp. (a Tano subsidiary).

CONFIGURATION

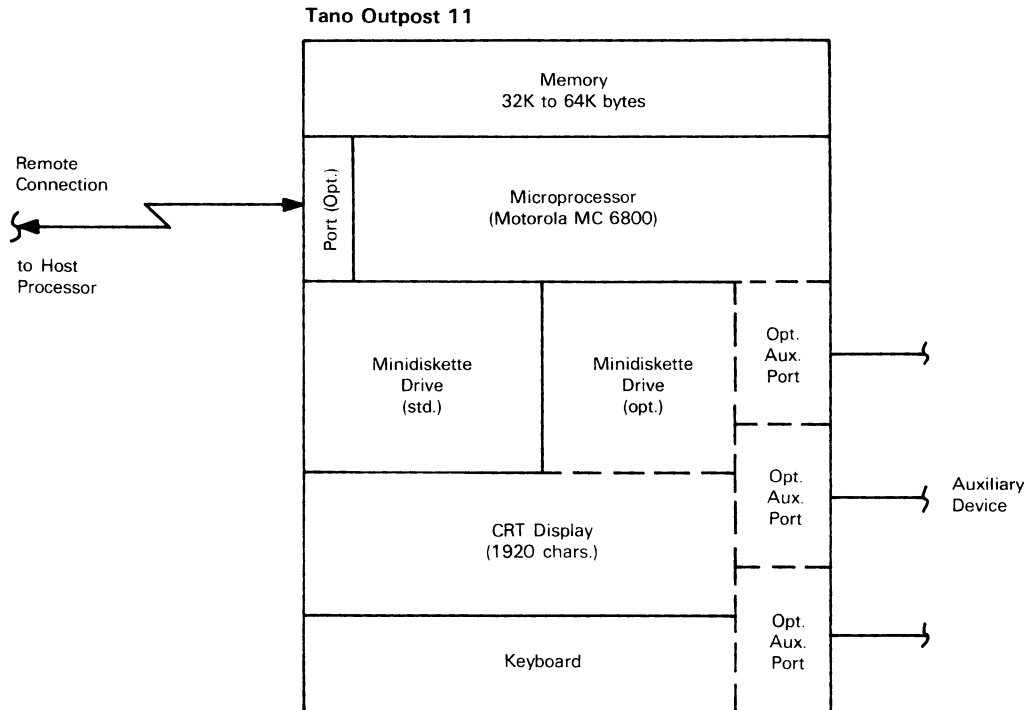
A stand-alone microcomputer system that supports both interactive and batch data communications. The basic terminal consists of a Motorola MC6800 microprocessor, a 1920-character CRT display, a non-detachable keyboard, and one single-sided minidiskette drive, all housed in a single cabinet. A second integral single-sided minidiskette drive can be added. In lieu of the single-sided minidiskette drives, one or two integral double-sided minidiskette drives, or one or two single-sided 8-inch diskette drives housed in a single separate cabinet, can be selected.

A 32K-byte user memory is provided, and can optionally be expanded in one or two 16K-byte increments to 64K bytes.

Up to four serial ports are optionally provided for connection of data communications lines or auxiliary I/O devices, such as printers, additional CRT terminals, or other peripherals. Each port contains an RS232-C and a 20mA dc current loop interface, with switch selection between the two. All

Tano Output 11

Configuration



➤ the cause for his dissatisfaction was frequent downtime. "We'd ship the boards back, replace them, and another problem would come up". However, the user also said that Tano was very responsive to their problems. Other problems were mentioned by some users, but all either were judged by them as minor or had been rectified by Tano.

The survey also indicates that Tano is well thought of as a company. Its technical support was given high ratings, and one user specifically stated that he felt that Tano was a progressive company with plans to update its systems in the future. □

➤ dating, and automatic space compression. A utility command set provides a simple command structure for setting the parameters of the display, testing memory, examining blocks of memory, and other functions.

A machine language monitor called LOTUS, a subset of the FLEX package, supports basic keyboard/display operations, such as memory change and examination, RS232 interfacing, keyboard inputting, and CRT functions, such as cursor movement and highlighting via reverse video, blinking, and high/low intensity.

Great Plains distributes several program products that enhance the usefulness of a system operating under FLEX. These include a mnemonic assembler, a disassembler, a relocatable and recursive macroassembler and linking loader, a relocating disassembler and segmented source text generator, a text editor, an enhanced text editor called SENATOR, a text processor, 36 additional FLEX system utilities, an assembly language program debugger, a conversion program called TANCON that converts Tano-formatted files to FLEX format, and a sort/merge program.

For data communications, Great Plains offers a FLEX-based terminal package called GYPSY. GYPSY permits the Outpost 11 to act as an intelligent terminal or as a host system for other terminals, and consists of four programs: a program that handles keyboard and serial interfacing, one that sends disk files to another system, one that accepts disk files from another system, and one that sets up parameters for Teletype compatibility, data transfer, and other terminal characteristics.

Other FLEX-based products written by Technical Systems Consultants and available through Great Plains include a diskette-based version of BASIC developed for scientific applications, and one for business applications. Four Great Plains business applications programs are also currently available: payroll, general ledger, accounts receivable, and accounts payable.

COMPONENTS

CRT DISPLAY UNIT: A 12-inch (diagonal measurement) CRT with a display arrangement of 24 lines of 80 characters for a total display capacity of 1920 characters. The character set consists of 96 upper and lower case ASCII symbols. All ASCII control codes can also be displayed via representative symbols. Each character is formed within a 7-by-9 dot matrix. Data is displayed in white. Highlighting features include dual intensity levels, reverse video, and blinking.

KEYBOARD: A non-detachable, typewriter-style keyboard with a separate 11-key numeric pad and a separate 9-key cursor control and function key cluster. The keyboard can generate any of the 128 ASCII character codes. Key functions within the main keygroup include Escape, New Line, Line Feed, Return, Tab, Rubout, Shift, Control, Alpha Lock, and Break. The separate cluster includes five cursor controls (up, down, left, right, and home), Insert Character, Scroll Down, Repeat, and Next Page keys. ➤

Tano Outpost 11

► **MINIDISKETTE DRIVE:** An integral single (standard) or dual (optional) drive that reads/records in single density on a single side of a 5-inch minidiskette. A single or dual drive that reads/records in single density on both sides is available as an alternative. Storage capacity is 80K bytes per drive for single-sided diskettes and 160K bytes per drive for double-sided diskettes. The drives are made by Shugart.

DISKETTE DRIVE: A separately-housed single or dual diskette drive is available as an optional alternative to using minidiskette drives. The diskette drive reads/records in single density on a single side of a standard 8-inch diskette. Storage capacity per drive is 250K bytes. The drives are made by Shugart.

PRICING

The Tano Outpost 11 is available for end-user sale, rental, or leasing through a nationwide network of dealers, or through Eclectic Systems Corp., Tano's rental and service subsidiary headquartered in Addison, Texas. Large end-user and OEM purchases are handled via factory-direct sale. A 90-day factory warranty applies, which provides for return-to-factory parts repair or replacement. Spare assemblies are available for purchase through Tano or its representatives. Although Tano does not offer an on-site maintenance service contract, individual dealerships may provide one for their customers.

	<u>Suggested List Price**</u>
Outpost 11; includes 32K byte RAM, CRT, keyboard, first single-side mini-diskette drive, and BASIC, COPS 11, and OPX software	\$2,595
Options	
Second minidiskette drive (single-sided)	440
First double-sided minidiskette drive; in lieu of single-sided drives	125
Second minidiskette drive (double-sided)	500
16K-byte memory increment; maximum 2 per system	415
Serial RS-232C interface; maximum 4 per system	240
First 8-inch diskette drive; single-sided; includes power supply and enclosure for two drives; in lieu of minidiskette drives	900
Second 8-inch diskette drive; single-sided	715
Stand	120
Software (available through Great Plains Computer Company, Inc.)	
FLEX 2.0	150
Mnemonic Assembler	65
Disassembler	70
Macroassembler and Linking Loader	150
Disassembler and Source Generator	70
Text Editor	65
SENATOR Text Editor	100
Text Processor	65
36 Utilities	119
Program Debugger	50
TANCON Conversion Program	50
Sort/Merge	75
GYPSY Terminal Package	150
Scientific BASIC	65
Extended BASIC (Business)	120
Payroll	100/300*
General Ledger	100/300*
Accounts Receivable	100/300*
Accounts Payable	100/300*

*First price shown is for precompiled program; second price is for source program.

**As of December 1979. Price increases currently under consideration will go into effect in early 1980.■

Tano Outpost 11

➤ Tano that rents, leases, and services the Outpost 11 and compatible equipment from other vendors. Tano is in the process of making certain changes in the product to attract the OEM market, and plans to redirect its market thrust primarily towards OEM vendors once these enhancements are implemented.

Organized in 1962, Tano's current enterprises have evolved from their initial business of manufacturing ship-board automation systems and steering control systems for both military and commercial users. In recent years, Tano has implemented monitoring and process control systems for refineries, chemical plants, pipelines, sewerage plants, and other industries and energy management systems in manufacturing plants and commercial office buildings. Their initial entry into the commercial computer terminal market came in early 1977 with the introduction of the Outpost 7, a cartridge tape-based user-programmable data entry terminal that Tano utilizes as a central processor in a number of their systems products.

USER REACTION

Datapro interviewed seven users of the Tano Outpost 11 during November, 1979. These users represented an installed base of 33 units, including one who had 20 terminals installed. Of those questioned, two indicated that they were using their Outpost 11's as terminals only. The remaining five indicated that the Outpost 11 was also being used in some manner as a mini- or microcomputer. The ratings obtained are as follows:

	Excellent	Good	Fair	Poor	WA*
Overall performance	4	2	1	0	3.4
Ease of operation	5	2	0	0	3.7
Hardware reliability	0	6	0	1	2.7
Maintenance service	1	1	1	0	3.0
Terminal software	1	3	1	0	3.0
Technical support	4	2	0	0	3.7

*Weighted Average on a scale of 4.0 for Excellent.

Of the four users who did not supply ratings for the maintenance service category, two users receive maintenance service from Eclectic Systems (one of whom rated Eclectic's service as "Excellent"), one user receives maintenance service from his dealer, and one performs his own maintenance. In addition, two of those surveyed did not rate software. One said that he obtained his software from his distributor, while the other stated that he wrote his own.

Almost all of those surveyed praised the Tano equipment for its cost-effectiveness. Some of the specific comments were: "a good buy for the price"; "in its price range, it's excellent"; "good hunk of machinery for the price". Versatility, durability, and flexibility were also mentioned when the users were asked to cite the advantages of the unit.

Reliability was also mentioned favorably by most; however, one user rated that category as "poor". He stated

➤ interfaces are interrupt-driven and bidirectional, so that data can be both sent and received from a peripheral.

TRANSMISSION SPECIFICATIONS

Transmission is asynchronous in the half- or full-duplex mode at switch-selectable transmission rates of 110, 150, 300, 600, 1200, 2400, 4800, or 9600 bits per second. The transmission code is an 8-level ASCII code. A 10- or 11-unit code structure, including one start bit and one or two stop bits, is used. Up to four data communications ports are optional. Odd, even, or no parity can be selected; checking is automatic with odd or even parity.

SOFTWARE

Tano currently provides the Outpost 11 with three diskette-softed software packages at no extra cost: a BASIC programming language interpreter, the COPS 11 utility package, and the OPX system exerciser and diagnostic tool. In addition, over 20 separately priced systems and applications program products, including the FLEX operating system, the GYPSY communications package, special versions of the BASIC interpreter, and applications program products have been created or modified specifically for use with the Outpost 11 by an independent distributor, the Great Plains Computer Company, Inc.

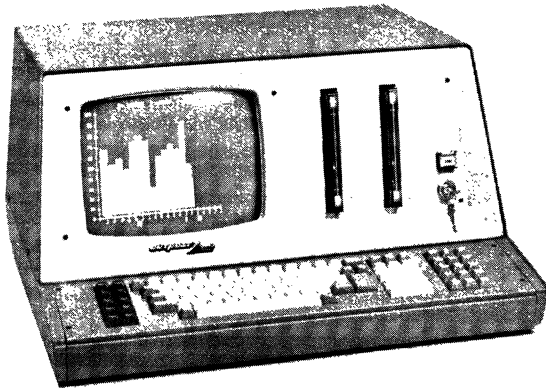
Tano's BASIC interpreter includes an integral command program that acts as the Outpost 11's operating system. The interpreter requires a minimum of 32K bytes of memory. Features include full floating point BCD arithmetic with a number range of 1.0E-99 to 9.99999999E+99, the capability to save and load user programs, the use of a direct mode for most statements, and the use of string variables and trigonometric functions. Tano BASIC includes the complete ANSI Standard BASIC plus the following additional features: multiple statement lines; program save/load with file names; program merge/chain; file Rename, Catalog, Zero, and Kill commands; 32-character strings; file get/put; open/close file statements; Field statement; On Error statement; and diskette file processing by relative record number.

COPS 11 is a generalized utility package designed to support data transfer from one I/O device to another, format diskettes, and perform certain command functions that are provided to permit greater flexibility and user control of the system. Typical COPS 11 functions include the transfer of data from diskette to diskette, from I/O or communications port to diskette, or from diskette to I/O or communications port; receipt of programs loaded downline from the host for storage on diskette or execution in memory; formatting diskettes; program loading from diskette into memory and execution; display of a diskette directory on the CRT; and deletion of data or program files from a diskette.

OPX is used to test individual system components and can diagnose faults down to the level of the printed circuit board. An error log indicates the number of accumulated errors detected in a system test. Test modules for monitoring various components and interfaces may be enabled/disabled by the operator to tailor the test program to a specific configuration. HELP messages in English aid the operator in selecting appropriate modules.

The FLEX operating system created by Technical Systems Consultants has been adapted by Great Plains Computer Company for the Outpost 11. The FLEX bootstrap ROM replaces the standard bootstrap firmware. FLEX requires the Outpost 11 to be configured with the dual diskette option and 48K bytes of user memory. The program provides enhanced operating functions and occupies 9K bytes of user memory. Functions include random access filing, file protection, dynamic file allocation, printer spooling, file

Tano Outpost 7 Intelligent Data Terminal



MANAGEMENT SUMMARY

The Tano Outpost 7 represents Tano's initial entry into the commercial computer terminal market. Organized in 1962, Tano's initial effort was the design and manufacture of shipboard automation systems and steering control for both military and commercial users. Over the past six years, Tano has designed automation systems for refineries, chemical plants, pipelines, and utility distribution networks as well as security, data collection, energy management, and workstation applications. The Outpost 7 reflects Tano's experience in the design and hardware implementation of systems for demanding, 24-hour-per-day applications.

The Outpost is a user-programmable display terminal. Its integral MC6800 microprocessor is available with up to 64K bytes of memory for program and data storage. One or two integral tape drives accommodate 3M-type data cartridges. Programs are loaded from tape via a firmware bootstrap loader.

User programs are created in extended ANSI BASIC via a BASIC interpreter. The tape-resident interpreter requires 12K bytes of memory and can compile source programs on a terminal with a minimum of 16K bytes. User programs can be keyed and stored on tape for later usage. Tano offers a data entry package called IDET for data entry, editing, and basic file manipulation. Tano also offers a programming aid called OMEX primarily for OEM vendors that develop their own operating systems. OMEX includes device drivers, I/O calls, and utility routines. All software is unbundled and is available on a purchase or rental basis.

Outpost 7 compares favorably with other stand-alone terminals of its class, such as the ADDS System 70, Texas Instruments 770, and Zentec 9003. Its low end-user and OEM price tags (not to mention quantity discounts) make it an attractive package. The use of tape cartridges in place of the now-popular diskettes may be less than desirable to some potential users, but the storage capacity is the same for both media—about 250K bytes. Outpost 7 provides most of the features offered by terminal vendors, and its data entry package (IDET) gives it turnkey ➤

A user-programmable, stand-alone, keyboard/display terminal. User programs are created in ANSI BASIC; data entry applications are also supported.

Standard features include microprocessor control, memory capacity from 8K to 64K bytes, a 1920-character display, one or two integral tape drives, selectable transmission rates up to 9600 bps, upper and lower case alphabets, highlighting, etc. Up to three auxiliary I/O device interfaces are optional.

A basic terminal with 16K bytes of memory and one tape drive is available for \$168 per month of \$4,045 purchase. End user and OEM quantity discounts are available. All software is priced extra.

CHARACTERISTICS

VENDOR: Tano Corporation, 4521 W. Napoleon Avenue, Metairie, LA 70001. Telephone (504) 888-4884.

DATE OF ANNOUNCEMENT: February 1977.

DATE OF FIRST DELIVERY: April 1977.

NUMBER DELIVERED TO DATE: 12.

SERVICED BY: Tano and third party.

CONFIGURATION

A stand-alone, microprocessor-based, keyboard/display terminal with non-detachable keyboard. The terminal contains a Motorola MC6800 microprocessor with 16K to 64K bytes of memory in 8-byte increments and one or two integral 3M-type tape cartridge drives. Up to three auxiliary ports are optional for a user-supplied serial printers or auxiliary I/O devices. Each auxiliary port contains an RS-232C and 20 ma dc current loop interface with switch selection between the two.

The Outpost 7 terminal is offered as a total of seven different models depending on memory size (16K, 32K, or 48K bytes), number of tape drives (one or two), and number of auxiliary ports (zero or one).

TRANSMISSION SPECIFICATIONS

Transmission is asynchronous in the half- or full-duplex mode at switch-selectable transmission rates of 110, 150, 300, 600, 1200, 2400, 4800, and 9600 bits/second. The standard transmission code is 8-level ASCII; EBCDIC is optional. A 10- or 11-unit code structure is used. The terminal is equipped with an RS-232C or 20 ma dc current loop interface.

DEVICE CONTROL

Terminal control is performed by a Motorola MC6800 microprocessor under the direction of operating software. ➤

Tano Outpost 7 Intelligent Data Terminal

▷ capability. The use of BASIC as a programming language permits easy implementation of user programs.

Tano currently does not offer a printer for hard-copy output, although it supplies an auxiliary interface that will accommodate most serial printers. Tano's market thrust is directed to large end users and to OEM vendors, who will integrate the terminal into their own systems and develop their own software. □

▶ Transmission can be performed on a character-by-character basis as each character is keyed or on a block basis where a line, page, or the memory contents is transmitted.

Full cursor control is provided. The cursor can be positioned up, down, left, right, or home. Cursor positioning can be addressed or sensed via program control.

Standard edit functions include character and line insert and delete and character, line, and screen erase. When operating in the protected format mode, only unprotected fields can be edited or erased.

Format protection is standard. A format can be keyed, edited, and stored for later use. Automatic tabulation is provided between unprotected fields in the format mode. Only unprotected fields are transmitted.

Roll and paging are also standard. Displayed data can be rolled up or down and the roll function can continue through memory. Paging permits the operator to step through memory, displaying a new page for each step.

SOFTWARE

Tano currently supports the Outpost 7 with four software packages: OMEX and MIDGET, minimal executives; IDET, a data entry package; and BASIC, a programming language.

OMEX is a collection of device drivers, executive interface routines, and a minimal executive that supports a single task. *MIDGET* is a multitasking version of *OMEX*. I/O is device independent and utilizes circular buffering to achieve maximum asynchronous device speed. The calling program has the option of waiting for I/O completion or continuing execution while the device driver completes the I/O operations. *OMEX* consists of a software interrupt handler, block and circular I/O buffering, and programmed I/O; a powerfail/restart routine, a clock interrupt service routine; a device interrupt service routine; and an operator control routine. *OMEX* also provides I/O calls and utility routines. Utility routines include index register operations, date and time transfer functions, stack operations, initialize functions, and memory clear and block transfer functions.

IDET 7000 performs generalized data entry and editing functions, which the operator selects from a displayed Status Page (menu). Formats can be created and modified, stored on tape, and recalled by name up to nine at a time. Data is keyed into unprotected fields using tab and backtab functions for cursor positioning. Automatic tabbing is provided when a variable field is completely filled. Constant fields are transmitted and/or recorded with the variable fields, but remain displayed with the protected fields for the next entry operation, precluding the job of rekeying the constant. Data validity checking is performed on each character position of a variable or constant field; an audible alarm is sounded and an error message is displayed when an invalid entry is attempted. Each character position can be delimited as alphanumeric, alphabetic, numeric, or a specific combination of characters.

Editing functions are provided for single and dual-tape terminals. A formatted data record can be read from tape, modified, and rewritten on the same tape without changing the physical size of the record. Unformatted or formatted files can be extensively modified on dual-tape units. A search function, which searches tape files for a specified character string up to 80 characters can be initiated at any point in the editing process. Data files can be deleted from a tape cartridge via initialization. All formatted records with the same format can be copied from one file to another; dual tape drives are required. A catalog of data files recorded on a tape cartridge can be obtained.

IDET features the use of 96 upper and lower case displayable characters, plus 23 form drawing characters for producing specialized formats and 9 specialized graphics characters. Eight display modes can be selected, including any combination of full- or half-intensity, reverse video, and blinking. All keys provide repeat action at 10 characters/sec. after a one second delay. The special Repeat function produces repetitive characters at 25 cps with no delay. *IDET* features a repertoire of 53 commands; 28 of the most commonly used commands are implemented as command keys for single keystroke operation. All commands can be executed via keyed or received codes. *IDET* supports cursor sensing and addressing and any serial printer with up to 132 print positions. Formatted data can be printed into preprinted forms. Blank characters are inserted for the protected fields prior to printing. *IDET* supports up to four I/O interfaces for communications and optional diskette drives, printers, etc.

Tano *BASIC* requires a minimum of 16K bytes of memory. Features include full floating point arithmetic with a number range of 1.0E-99 to 9.999999999E+99, the capability to save and load user programs, the use of a direct mode for most statements, and the use of string variables and trig functions. Tano *BASIC* includes the complete ANSI Standard *BASIC*, plus the following additional features: multiple statement lines, tape save/load with file names, tape read/write, tape catalog, tape zero, 32-character strings, and open/close file statements.

COMPONENTS

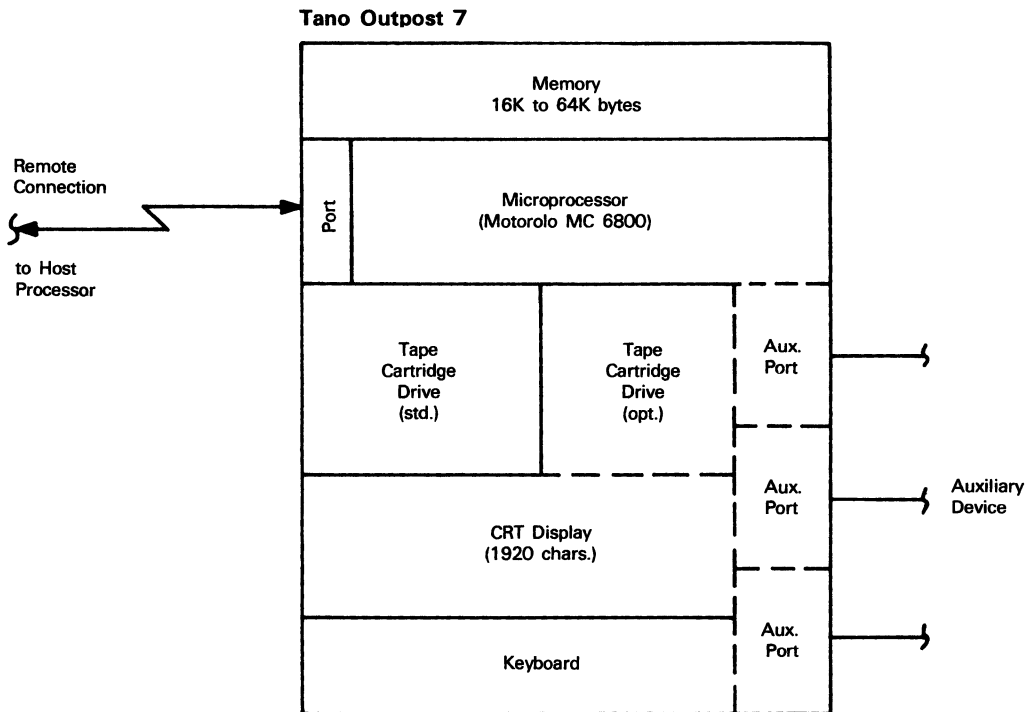
CRT DISPLAY UNIT: A 12-inch (diagonal measurement) CRT with a display arrangement of 24 lines of 80 characters for a total display capacity of 1920 characters. The character set consists of 96 upper and lower case ASCII symbols. All ASCII control codes can also be displayed via representative symbols. Each character is formed within a 7-by-9 dot matrix. Data is displayed in white. Highlighting features include dual-intensity levels, reverse video, and blinking.

KEYBOARD: A non-detachable, typewriter-style keyboard with a separate 14-key numeric pad and a separate 15-key cursor-control and function-key pad. A set of 10 function keys are located to the left of the main keygroup. The keyboard can generate any of 128 ASCII or EBCDIC (optional) character codes. Key functions within the main keygroup include Line Feed, Return, New Line, Rub Out, Escape, Tab, Repeat, Alpha Lock, Shift, and Control Shift. The numeric pad includes three erase keys: Erase Memory, Erase to End, and Erase EOL. The cursor control pad keys include five cursor keys, Scroll Up and Scroll Down, Next Page and Previous Page, Break, Character and Line Insert and Delete, and Backtab. The 10-key function pad to the left of the main keygroup includes Read, Write, Search, Check, Form, Print, Xmit, Reset, Status, and Start keys.

CARTRIDGE TAPE DRIVE: The cartridge tape drive accommodates a 3M tape cartridge. The maximum per cartridge storage capacity is 250,000 characters, recorded at 800 bits/inch. The read, write, rewind, and search tape speed is 10.5 inches/second. The data transfer rate is 1100 bytes/second. ▶

Tano Outpost 7 Intelligent Data Terminal

Configuration



► PRICING

The Tano Outpost 7 is available for rental or purchase. The minimum rental term is 12 months; return-to-factory maintenance is included in the rental charge. All software is priced extra. A 36- or 60-month full payout lease is also available; contact Tano for lease rates and details.

The purchase prices presented in the accompanying table are for end-user purchases of one to four units; quantity discounts of from about 5 to 23.5 percent apply. An OEM discount of about 10.5 percent is offered; further quantity discounts of from about 11 to 22 percent are offered on OEM arrangements.

		<u>Monthly Rental*</u>	<u>Purchase End User</u>
	Terminals with one tape drive and one RS-232C interface—		
1116	With 16K bytes of RAM	\$168	\$4,045
1132	With 32K bytes of RAM	183	4,475
1148	With 48K bytes of RAM	198	4,900
	Terminals with two tape drives and one RS-232C interface—		
2132	With 32K bytes of RAM	196	4,830
2148	With 48K bytes of RAM	201	5,260
	Terminals with two tape drives and two RS-232C interfaces—		
2232	With 32K bytes of RAM	203	5,025
2248	With 48K bytes of RAM	218	5,450
	Blank tapes, each	—	20
	Software		
	IDET-7000	15	250
	BASIC-7	15	250
	OMEX	10	150

*Includes return-to-factory maintenance. ■

