

# Burroughs ET 1100 Display Terminals

## MANAGEMENT SUMMARY

**UPDATE:** *The ET 1100 display terminals are the latest in Burroughs' line of displays, succeeding the older TD 830 and MT 983/985 models. This report has been updated to reflect price decreases for the ET 1100 terminals.*

In April 1983, Burroughs Corporation introduced its ET 1100 display terminal as the replacement for its MT983 and MT993 units which had earlier replaced Burroughs' highly successful TD 830 terminal line. Conforming to the trend in the display terminal industry toward ergonomic enhancements, the ET 1100 terminals features an etched, nonglare screen; a high-resolution, 14-inch display unit; a tilt/swivel-adjustable base; and a detached, low-profile keyboard.

In addition to these ergonomic enhancements, the ET 1100 terminals offer a variety of editing and display functions. The standard display format of 26 lines by 80 characters includes a user-programmable status line and a system status line; double-height/double-width characters may be either configured or set programmatically. A multipage scroll function allows multiple pages to be treated as one large page. A printer pass-through function allows data to be routed from the host processor to a printer without inhibiting ET 1100 display activity. A configuration menu feature allows the user to view and modify optional parameters for address, buffer allocation, printing options, editing characteristics, screen format, and data communication attributes.

The ET 1100 series consists of two models. The standard ET 1100 features RS-232-C/TDI (Two-Wire Direct Inter-



*The ET 1100 display terminal is Burroughs' general-purpose workstation for the company's computer systems. The standard ET 1100 is equipped with RS-232-C/TDI interfacing; the ET 1101 version features Burroughs BDAA communications.*

The ET 1100 display is Burroughs' current general-purpose display terminal product offering. The ET 1100 displays are designed for use with the company's broad line of computer products, including the B 90 and B 1900 minicomputers, and the A 3, A 9, A 15, B 2900, B 3900, and B 7900 large computer systems. The ET 1100 terminals are available with either RS-232-C/TDI interfacing, or Burroughs Direct Asynchronous Access (BDAA) interfacing.

**MODELS:** ET 1100 and ET 1101.

**DISPLAY:** A 14-inch display screen (diagonally measured) is standard for both the ET 1100 and ET 1101. Screen capacity is 2,080 characters, arranged in 24 lines of 80 characters each, plus two additional status display lines.

**KEYBOARD:** A detached, low-profile, typewriter-style keyboard with 10 user-programmable function keys is standard.

**COMPETITION:** Beehive, Carterfone, Cybernex, Delta Data, and Visual Technology make Burroughs-compatible terminals.

**PRICE:** Both models sell for \$1,580; lease plans are available.

## CHARACTERISTICS

**VENDOR:** Burroughs Corporation, Burroughs Place, Detroit, MI 48232. Telephone (313) 972-7000.

**DATE OF ANNOUNCEMENT:** April 1983.

**DATE OF FIRST DELIVERY:** May 1983.

**NUMBER DELIVERED TO DATE:** Information not available.

**SERVICED BY:** Burroughs Corporation.

## MODELS

The ET 1100 is a stand-alone unit featuring a 14-inch (diagonally measured) display screen and a typewriter-style alphanumeric keyboard. The model is available with a choice of RS-232-C and TDI (Two-Wire Direct Interface) data communications interfacing (Model ET 1100) or Burroughs Direct Asynchronous Access (BDAA) interfacing (Model ET 1101). Optional peripherals include a variety of dot matrix and letter quality printers.

## TRANSMISSION SPECIFICATIONS

Transmission is in half-duplex mode at speeds up to 38,400 bps; synchronous or asynchronous communication is selectable from the keyboard or host system. RS-232-C and Burroughs Two-Wire Direct Interface (TDI) interfaces are standard on Model ET 1100; a Burroughs Direct Asynchronous Access (BDAA) interface is standard on the ET 1101.

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▷ face) communications. The ET 1101 version features Burroughs Direct Asynchronous Access communications. The ET 1100 terminals are designed specifically for use with Burroughs' line of minicomputer and large computer systems. Burroughs systems that provide for the use of ET 1100 workstations include: the B 90 and B 1900 minicomputers; the A 3, A 9, and A 15 computer systems; and the B 2900, B 3900, and B 7900 computer systems.

Burroughs also markets the ET 2000 series of multifunction workstations. Unlike the ET 1100 line, the ET 2000 products provide local storage, bit-mapped graphics, and color as well as monochrome displays.

### COMPETITIVE POSITION

Like the other members of the vendor group known as BUNCH, Burroughs, Sperry (formerly Univac), NCR, Control Data, and Honeywell, Burroughs is primarily a minicomputer and large computer system vendor. The company's terminals are designed primarily for use in Burroughs operating environments and, therefore, do not offer IBM- or standard teletype-compatibility. Within this market, Burroughs is not faced with particularly stiff competition from any of the independent terminal vendors. There are a number of terminal manufacturers who offer a Burroughs-compatible model as part of their product line; however, these models do not serve as an integral member of those lines. Listed among these vendors are Beehive, Carterfone, Cybernex, Delta Data, and Visual Technology.

### ADVANTAGES AND RESTRICTIONS

Although the Burroughs Corporation stresses ergonomic design as a major advantage of its ET 1100 terminal, the features it offers in this area (tilt/swivel base, low-profile keyboard) are pretty much the current industry standard. Real advantages of the unit can be found in its enhancements for increased terminal functionality: a keystroke buffer, which allows keying of data during transmit and receive modes; N-key rollover; a printer pass-through function, which allows the user to specify the printer as a logically separate address; and a configuration menu, for optional parameters.

### USER REACTION

During the months of November and December 1984, Datapro, in conjunction with *Data Communications* magazine, conducted a mail survey of display terminal, voice/data workstation, and cluster controller users. The 1985 Terminal Users Survey was the result. In this survey, Datapro received a total of 70 responses from Burroughs terminal users, covering an installed base of nearly 5,000 units. Broken down by model, the response counts were ET 1100 (24 users); MT 983 (11 users); MT 985 (5 users); SR 100 (8 users); TD 830 (19 users); and unspecified models (3 users). The ET 1100 users reported on an installed base of 2,288 terminals. These users were asked to rate their terminals in seven specific categories. Their ratings are summarized in the following table.

▶ Standard communications procedures supported include ODT point-to-point, poll, select, fast select, contention, broadcast, group select, and group poll. Data compression through the insertion of tab field identifiers at the end of variable fields eliminates the transmission of spaces between actual data fields.

### DEVICE CONTROL

Variable functional features configurable through the keyboard or host system program control include data rate, page length, characters-per-line, and number of pages; cursor control, variable or fixed tabulation positions, field overflow inhibit, wraparound inhibit, terminal address selection, and data communications control.

The cursor can be configured as a blinking or nonblinking block; it can be positioned from the host, and its position can be transmitted to the host. The cursor can also be moved via any of the following functions: fixed tabulation—establishing fixed tab stops every eighth character within the line; variable tabulation—establishing columnar tab stops at any position within the line; and reverse tabulation—moving the cursor from a field to a prior field, or from a tab stop to a prior tab stop.

The field overflow inhibit function provides for cursor movement between unprotected data fields through the use of the Tab and Reverse Tab keys. The wraparound inhibit function prevents cursor advancement beyond the last character position on a page as additional keyboard data is entered. An audible alarm can be sounded as the cursor reaches a predetermined character position on a page; this feature is also keyboard- or host-selectable.

A line monitor mode feature makes it possible to send and receive messages on one page while the line monitor operates on another. The user may shift between line monitor and data entry pages as desired. Access to the line monitor is controlled through a security feature, which can also be used to prevent access to the configuration menu and the host application.

Data can be formatted into unprotected, protected, and transmittable protected fields through the terminal's forms mode capability. Any two characters can be selected as delimiters to define unprotected data field. Transmittable protected data field delimiters are fixed. Unprotected and transmittable protected fields can both be transmitted when the terminal is in forms mode. Data fields can also be right-justified through the keyboard or host.

Edit functions include character insert/delete, line insert/delete, line move up/down, clear to end-of-line/page, and search mode (for locating and correcting error characters, including those positioned in protected fields). Data highlighting attributes include blink, underline, bright, secure (data is entered but not displayed), and reverse video.

A page roll capability allows data to be rolled up or down within the page while the cursor remains in a fixed position on the screen. The screen can be used as a window to the display memory through the scroll function. With this capability, the entire contents of the display memory can be examined without regard to page boundaries as data is transferred line for line across the display screen. During scrolling, the cursor remains in a fixed position on the screen.

LED indicators on the keyboard include: the Line Terminal Activity Indicator; Enquiry Indicator; Local Indicator; Receive Indicator; and the Transmit Mode Indicator and caps lock. The 25th display line provides 80 characters for the display of user-written error messages; a 26th line provides

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|  | Excellent | Good | Fair | Poor | WA* |
|--|-----------|------|------|------|-----|
| Overall performance                          | 15        | 9    | 0    | 0    | 3.6 |
| Ease of operation                            | 14        | 9    | 1    | 0    | 3.5 |
| Display clarity                              | 13        | 10   | 1    | 0    | 3.5 |
| Keyboard feel & usability                    | 12        | 11   | 1    | 0    | 3.5 |
| Ergonomics                                   | 17        | 7    | 0    | 0    | 3.7 |
| Hardware reliability                         | 13        | 9    | 1    | 1    | 3.4 |
| Mfr.'s maintenance service/technical support | 7         | 11   | 5    | 1    | 3.0 |

\*Weighted Average on a scale of 4.0 for Excellent.

The ET 1100 terminals received consistently higher ratings than the older Burroughs models, indicating that Burroughs users are pleased with the new generation of terminals.

The users were asked to list the chief factor that influenced their decision to purchase the Burroughs terminals. As one would expect in dealing with terminals for specific vendors' computer systems, the highest percentage of users (43 percent) cited vendor recognition/loyalty. Another 41 percent indicated that the features/functionality of the terminals was the deciding factor. When asked whether or not they would recommend the ET 1100 terminals to other users, 23 of the 24 respondents indicated that they would; the 24th user was noncommittal. □

▶ for the display of system status information such as: existing or previous error conditions; cursor page number; and host messages which are not accessible to the operator.

### COMPONENTS

**CRT DISPLAY UNIT:** The ET 1100 and ET 1101 terminals feature a 14-inch (diagonally measured) display screen with tilt/swivel display base as standard. Screen capacity is 2,080 characters, arranged in 24 lines of 80 characters, with two additional lines for user and system status information. Ten pages of display memory are standard. Characters are displayed in green (P39 phosphor), and formed utilizing a 7-by-9 dot matrix. Double-width and double-height characters are available. Normal video features green characters on a dark background. In negative video condition, characters are displayed in green on a white background. The 128-character ASCII set is displayable, including uppercase, numerics, and special symbols. A vertical height-adjustment feature is optional.

**KEYBOARD:** A detached, low-profile, typewriter-style keyboard with 10 user-programmable function keys (20 logical functions) is standard. Featured keyboard functions include caps lock, numerics lock, and N-key rollover. All keys are typematic. A 25-key numerics keypad and a palm rest attachment are optionally available.

### PRICING

The ET 1100 family terminals are available for purchase or on a one-, three-, or five-year lease. Annual contracts for on-site or depot maintenance are available; the prices listed in this report are for on-site maintenance.

## EQUIPMENT PRICES

| Models         |  | Monthly Charge      |                   |                   |                   |                  |
|----------------|--|---------------------|-------------------|-------------------|-------------------|------------------|
|                |  | Purchase Price (\$) | 1-Year Lease (\$) | 3-Year Lease (\$) | 5-Year Lease (\$) | Maintenance (\$) |
| ET 1100        | Display Terminal w/keyboard & RS-232-C/TDI | 1,580               | 105               | 88                | 79                | 20.33            |
| ET 1101        | Display Terminal w/keyboard & BDAA         | 1,580               | 105               | 88                | 79                | 20.33            |
| <b>Options</b> |  |                     |                   |                   |                   |                  |
| ET 5601        | 3-inch Height Adjustment                   | 125                 | 9                 | 7                 | 7                 | NA               |
| ET 5200        | 25-key Auxiliary Keypad                    | 125                 | 13                | 11                | 10                | 1.80             |

NA—Not applicable. ■



# Burroughs ET 1100 Display Terminals



*The ET 1100 terminal combines ergonomic design with a variety of text editing features.*

## MANAGEMENT SUMMARY

In April 1983, Burroughs Corporation introduced its ET 1100 display terminal as the replacement for its MT983 and MT993 units. Designed to incorporate the latest in ergonomic enhancements, the ET 1100 terminal features an etched, non-glare screen; high-resolution, 14-inch display unit; tilt/swivel-adjustable base; and a detached, low-profile keyboard.

In addition to its ergonomic enhancements, the ET 1100 offers a variety of editing and display functions. The standard display format of 26 lines by 80 characters includes a user-programmable status line and a system status line; double-height/double-width characters may be either configured or set programmatically. A multi-page scroll function allows multiple pages to be treated as one large page. A printer pass-through function allows data to be routed from the host processor to a printer without inhibiting ET 1100 display activity. A configuration menu feature allows the user to view and modify optional parameters for address, buffer allocation, printing options, editing characteristics, screen format, and data communication attributes.

## COMPETITIVE POSITION

Burroughs Corporation occupies a distinctive position in the display terminal marketplace, in that its terminals are designed for primary use in Burroughs operating environments and, therefore, do not offer IBM- or teletype-compatibility. Within this self-made market, Burroughs is not faced with particularly stiff competition from any of the major vendors. There is, however, a small grouping of

The ET 1100 display is Burroughs' latest terminal product offering.

**MODELS:** ET 1100, ET 1101.

**DISPLAY:** A 14-inch display screen (diagonally measured) is standard for all units. The unit is available with a choice of either RS-232-C and TDI data communications interfacing (ET 1100), or Burroughs Direct Asynchronous Access (BDAA) interfacing (ET 1101).

**KEYBOARD:** A detached, low-profile, typewriter-style keyboard with 10 user-programmable function keys is standard.

**COMPETITION:** Northern Telecom, Beehive, Carterfone, Cobar, and Delta Data.

**PRICE:** Either model sells for \$1,895. Leasing and maintenance contracts are optionally available.

## CHARACTERISTICS

**VENDOR:** Burroughs Corporation, Burroughs Place, Detroit, MI 48232. Telephone (313) 972-8068.

**DATE OF ANNOUNCEMENT:** April 1983.

**DATE OF FIRST DELIVERY:** May 1983.

**NUMBER DELIVERED TO DATE:** Information not available.

**SERVICED BY:** Burroughs Corporation.

## MODELS

The ET 1100 is a stand-alone unit featuring a 14-inch (diagonally measured) display screen and a typewriter-style alphanumeric keyboard. The model is available with a choice of RS-232-C and TDI data communications interfacing (Model ET 1100) or Burroughs Direct Asynchronous Access (BDAA) interfacing (Model ET 1101). Optional peripherals include a 90-cps journal printer and a 35-cps letter-quality terminal printer.

## TRANSMISSION SPECIFICATIONS

Transmission is in half-duplex mode at speeds to 38,400 bps; synchronous or asynchronous communication is selectable from the keyboard or host system. RS-232-C and two-wire direct connect (TDI) interfaces are standard on Model ET 1100; BDAA is standard on the ET 1101. Standard communications procedures supported include ODT point-to-point, poll, select, fast select, contention, broadcast, group select, and group poll. Data compression through the insertion of tab field identifiers at the end of variable fields eliminates the transmission of spaces between actual data fields.

## DEVICE CONTROL

Variable functional features configurable through the keyboard or host system program control include: data rate,

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▷ display terminal manufacturers who offer Burroughs-compatibility in their products. Listed among these vendors are Northern Telecom (Vision 830); Beehive (Model DM83); Carterfone (Model 9830); Cobar (Model 3830); and Delta Data (Model 2830-II).

### ADVANTAGES AND RESTRICTIONS

Although the Burroughs Corporation stresses ergonomic design as a major advantage of its ET 1100 terminal, the features it offers in this area (tilt/swivel base, low-profile keyboard) are pretty much the current industry standard. Real advantages of the unit can be found in its enhancements for increased terminal functionality: a keystroke buffer which allows keying of data during transmit and receive modes; N-key rollover; a printer pass-through function which allows the user to specify the printer as a logically separate address; and a configuration menu for optional parameters.

### USER REACTION

Datapro received no responses from ET 1100 display terminal users in its 1983 Alphanumeric Display Terminal Survey, and Burroughs declined to provide us with a list of users. Therefore, no User Reaction section appears in this report. □

▶ page length, characters-per-line, and number of pages; cursor control, variable or fixed tabulation positions, field overflow inhibit, wraparound inhibit, terminal address selection, and data communications control.

The cursor can be configured as a blinking or non-blinking block; it can be positioned from the host, and its position can be transmitted to the host. The cursor can also be moved via any of the following functions: fixed tabulation—establishing fixed tab stops every eighth character within the line; variable tabulation—establishing columnar tab stops at any position within the line; and reverse tabulation—moving the cursor from a field to a prior field, or from a tab stop to a prior tab stop.

The field overflow inhibit function provides for cursor movement between unprotected data fields through the use of the Tab and Reverse Tab keys. The wraparound inhibit function prevents cursor advancement beyond the last character position on a page as additional keyboard data is entered. An audible alarm can be sounded as the cursor reaches a predetermined character position on a page; this feature is also keyboard-/host-selectable.

A line monitor mode feature makes it possible to send and receive messages on one page while the line monitor operates on another. The user may shift between line monitor and data entry pages as desired. Access to the line monitor is controlled through a security feature, which can also be used to prevent access to the configuration menu and the host application.

Data can be formatted into unprotected, protected, and transmittable protected fields through the terminal's forms mode capability. Any two characters can be selected as delimiters to define unprotected data field. Transmittable protected data field delimiters are fixed. Unprotected and transmittable protected fields can both be transmitted when the terminal is in forms mode. Data fields can also be right-justified through the keyboard or host.

Edit functions include character insert/delete, line insert/delete, line move up/down, clear to end-of-line/page, and search mode (for locating and correcting error characters, including those positioned in protected fields). Data highlighting attributes include blink, underline, bright, secure (data is entered but not displayed), and reverse video.

A page roll capability allows data to be rolled up or down within the page while the cursor remains in a fixed position on the screen. The screen can be used as a window to the display memory through the scroll function. With this capability, the entire contents of the display memory can be examined without regard to page boundaries as data is transferred line for line across the display screen. During scrolling, the cursor remains in a fixed position on the screen.

LED indicators on the keyboard include: the Line Terminal Activity Indicator; Enquiry Indicator; Local Indicator; Receive Indicator; and the Transmit Mode Indicator and caps lock. The 25th display line provides 80 characters for the display of user-written error messages; a 26th line provides for the display of system status information such as: existing or previous error conditions; cursor page number; and host messages which are not accessible to the operator.

### COMPONENTS

**CRT DISPLAY UNIT:** The ET 1100 features a 14-inch (diagonally measured) display screen with tilt/swivel display base as standard. Screen capacity is 2080 characters, arranged in 24 lines of 80 characters, with two additional lines for user and system status information. Ten pages of display memory is standard. Characters are displayed in green phosphor, and formed utilizing a 7-by-9 dot matrix. Double-width and double-height characters are available. Normal video features green characters on a dark background. In negative video condition, characters are displayed in green on a white background. The 128-character ASCII set is displayable, including upper case, numerics, and special symbols. A vertical height-adjustment feature is optional.

**KEYBOARD:** A detached, low-profile, typewriter-style keyboard with 10 user-programmable function keys is standard. Featured keyboard functions include caps lock, numerics lock, and N-key rollover. All keys are typematic. A 25-key numerics keypad and a palm rest attachment are optionally available.

### PRICING

The ET 1100 terminal is available for purchase or on a one-, three-, or five-year lease. Annual contracts for on site or depot maintenance are available. ▶

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|                    |   | <u>Purchase Price</u> | <u>1-Year</u> | <u>Monthly Leases</u> |               | <u>Annual Maintenance</u> |              |
|--------------------|---|-----------------------|---------------|-----------------------|---------------|---------------------------|--------------|
|                    |   |                       |               | <u>3-Year</u>         | <u>5-Year</u> | <u>On Site</u>            | <u>Depot</u> |
| ET 1100            | 14-inch Workstation with Keyboard; RS-232-C/TDI Data Communications | \$1,895               | \$105         | \$ 88                 | \$ 79         | \$244.00                  | \$122        |
| ET 1101            | 14-inch Workstation with Keyboard; BDAA Data Communications         | 1,895                 | 105           | 88                    | 79            | 244.00                    | 122          |
| <b>Options</b>     |   |                       |               |                       |               |                           |              |
| ET 5601            | 3-inch Height Adjustment  | 189                   | 9             | 7                     | 7             | N/A                       | N/A          |
| ET 5200            | 25-Key Auxiliary Keypad   | 189                   | 11            | 9                     | 8             | 18.00                     | 9            |
| <b>Peripherals</b> |   |                       |               |                       |               |                           |              |
| AP 310             | Auxiliary Journal Printer (Receive Only); 90 cps                    | 1,895                 | 97            | 95                    | 92            | 207.60                    | N/A          |
| AP 1300            | Letter-Quality Terminal Printer; 35 cps                             | 4,568                 | 190           | 184                   | 179           | 385.20                    | N/A ■        |



# Burroughs MT 983/MT 993 Modular Display Terminals



*The Burroughs MT 983 Modular Display Terminal features a 12-inch, green phosphor display screen. A choice of three detached keyboards are available, including the expanded function alphanumeric keyboard, shown here.*

## MANAGEMENT SUMMARY

The MT 983 and MT 993 display terminals are Burroughs' replacements for their popular TD 830 series terminals. The new models are members of the company's BMT (Burroughs Modular Terminal) family, which features improved modularity of design. Each MT 983/MT 993 terminal includes a BMT microprocessor subsystem.

The user has a choice of a 12-inch (MT 983) or 9-inch (MT 993) display screen. Both models feature a 2000-character screen capacity, arranged in 24 lines of 80 characters, plus a 25th line with 80 characters for status information. A combined communications buffer/display buffer is provided. In addition, three keyboards are available: a data entry keyboard; a typewriter-style alphanumeric keyboard; and a typewriter-style alphanumeric keyboard with a numeric pad and special function keys. The MT 983/MT 993 terminals also offer a full range of data communication protocols including asynchronous, synchronous, two-wire direct connect (TDI), and Burroughs Direct Asynchronous Access (BDAA).

The MT 983/MT 993 terminals feature memory paging; display memory can be divided into multiple pages through reconfiguration via the keyboard or the host. A scroll function is provided to enable the user to view the entire contents of display memory. A forms mode capability provides for data formatting into unprotected, protected, and transmittable protected data fields.

Editing capabilities on the MT 983/MT 993 include character insert/delete, line insert/delete, line move ➤

General purpose input and display systems utilizing the Burroughs BMT microprocessor.

The terminals feature a 12-inch (MT 983) or 9-inch (MT 993) display screen and a choice of three keyboard styles. Total display capacity is 2000 characters, arranged in 24 lines of 80 characters each plus a 25th status line. Other standard features include data highlighting, editing capabilities, memory paging, forms mode, and self-contained confidence testing and fault diagnostic capabilities. Optional peripherals available include a magnetic card reader, printer, and microdisk subsystem.

Purchase price for either display is \$1,720. Keyboard prices range from \$275 to \$550. One-, three-, and five-year leases are also available.

## CHARACTERISTICS

**VENDOR:** Burroughs Corporation, Burroughs Place, Detroit, MI 48232. Telephone (313) 972-8068.

**DATE OF ANNOUNCEMENT:** February 1980.

**DATE OF FIRST DELIVERY:** April 1980.

**NUMBER DELIVERED TO DATE:** Information not available.

**SERVICED BY:** Burroughs Corporation.

## CONFIGURATION

The MT 983 and MT 993 are stand-alone, modular display stations. The MT 983 features a 12-inch (diagonally measured) display screen, while the MT 993 features a 9-inch (diagonal) display screen. A choice of three detached, modular keyboards are available for both models. These include a data entry keyboard, a typewriter-style alphanumeric keyboard, and a typewriter-style alphanumeric keyboard with a numeric pad and special function keys. Both models can also be configured with the following optional peripherals: a magnetic card reader; an 80KB microdisk subsystem; an 80/160KB microdisk subsystem; and a 90 cps journal printer.

## TRANSMISSION SPECIFICATIONS

Transmission is in the half-duplex mode, utilizing one of the following communications interfaces: asynchronous data set at speeds up to 1800 bps; synchronous data set at speeds up to 9600 bps; two-wire direct connect (TDI) up to 1,000 feet, at speeds up to 19,200 bps; and Burroughs Direct Asynchronous Access (BDAA) up to 15,000 feet, at speeds up to 38,400 bps. Standard communications procedures supported include poll, select, fast select, multipoint, contention, broadcast, group select, and group poll. Start and stop positions for data transmissions are selectable through the keyboard or the host. Data compression through the insertion of tab field identifiers at the end of variable fields eliminates the transmission of spaces between actual data fields. ➤

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▷ up/down, clear to end-of-line/page, and search. Video attributes include blink, underline, bright, secure, and reverse video. The screen format can be reconfigured through the keyboard or host to display 24 lines of 40 double-width characters.

Automatic confidence testing (when the terminal is powered on) and fault diagnostics are both included in the MT 983/MT 993 terminals for user or host verification of proper operation. The confidence test automatically transmits successful results to the host.

Peripherals that are optionally available for use with the terminals include a magnetic card reader, a 90 cps journal printer, and a microdisk subsystem. □

### ▶ DEVICE CONTROL

Variable functional features configurable through the keyboard or host system program control include: data rate, page length, characters-per-line, cursor control, variable or fixed tabulation positions, field overflow inhibit, wraparound inhibit, terminal address selection, and data communications control.

The cursor can be configured as a blinking or non-blinking block; it can be positioned from the host, and its position can be transmitted to the host. The cursor can also be moved via any of the following functions: fixed tabulation—establishing fixed tab stops every eighth character within the line; variable tabulation—establishing columnar tab stops at any position within the line; and reverse tabulation—moving the cursor from a field to a prior field, or from a tab stop to a prior tab stop.

The field overflow inhibit function provides for cursor movement between unprotected data fields through the use of the SKIP, TAB, and REVERSE TAB keys. The wraparound inhibit function prevents cursor advancement beyond the last character position on a page as additional keyboard data is entered. An audible alarm can be sounded as the cursor reaches a predetermined character position on a page; this feature is also keyboard-/host-selectable.

Display mode can be divided into multiple pages, with each page consisting of a minimum of four lines of display memory, and expandable up to the limits of the display memory in equal increments of four lines. During multiple page operations, the terminal is able to separate the data communications pointer from the cursor, allowing keyboard data to be entered on one page and external data (data communications or peripheral) to be entered into or transmitted from another. Page advance and return functions are provided for cursor movement between pages.

Data can be formatted into unprotected, protected, and transmittable protected fields through the terminal's forms mode capability. Any two characters can be selected as delimiters to define an unprotected data field. Transmittable protected data field delimiters are fixed. Unprotected and transmittable protected fields can both be transmitted when the terminal is in forms mode. Data fields can also be right-justified through the keyboard or host.

Edit functions available on the MT 983/MT 993 include character insert/delete, line insert/delete, line move up/down, clear to end-of-line/page, and search mode (for locating and correcting error characters, including those positioned in protected fields). Data highlighting attributes

include blink, underline, bright, secure (data is entered but not displayed), and reverse video.

A page roll capability allows data to be rolled up or down within the page while the cursor remains in a fixed position on the screen. The screen can be used as a window to the display memory through the scroll function. With this capability, the entire contents of the display memory can be examined without regard to page boundaries as data is transferred line for line across the display screen. During scrolling, the cursor remains in a fixed position on the screen.

LED indicators on the keyboard include: the Line Terminal Activity Indicator; Enquiry Indicator; Local Indicator; Receive Indicator; and the Transmit Mode Indicator. The 25th display line provides 80 characters for the display of status information such as: existing or previous error conditions; cursor page number; host messages which are not accessible to the operator; and user-written error messages from the keyboard or host, up to 64 characters.

### COMPONENTS

**CRT DISPLAY UNIT:** The MT 983 features a 12-inch (diagonally measured) display screen; the MT 993 features a 9-inch (diagonally measured) display screen. Screen capacity for both models is 2000 characters, arranged in 24 lines of 80 characters, plus a 25th line of 80 characters for status information. Characters are displayed in green phosphor, and formed utilizing an 8 x 12 dot matrix. Normal video features green characters on a dark background. In negative video condition, characters are displayed in green on a white background. The 128-character ASCII set is displayable, including upper and lower case, numerics, and special symbols.

**KEYBOARDS:** Three styles of keyboards are available—a data entry-style keyboard, an alphanumeric typewriter-style keyboard, and an expanded function alphanumeric typewriter-style keyboard.

The TP 119 data entry keyboard consists of a 64-key and function main array, 5 function control keys, and 6 indicator lights. The TP 119 keyboard resembles a keypunch keyboard in the placement of numerics and special characters.

The TP 110 alphanumeric keyboard has a typewriter-style layout and consists of a 59-key main array, 6 special purpose keys, 5 function keys, and 6 indicator lights.

The TP 130 expanded function alphanumeric keyboard has a typewriter-style layout and consists of a 62-key main array, a 13-key numeric pad, 22 function control keys, and 9 user-definable function keys.

All keyboard models feature automatic key repeat.

**PRINTER:** The TP 313 Journal Printer features 90 cps bidirectional matrix printing over an 8.5-inch print line. Horizontal spacing is program-selectable at 6, 8, 12, or 16 cpi; vertical spacing is variable in 1/24-inch increments. A pin feed platen accommodates continuous forms 9.5 inches wide and 5.5 or 11 inches long. Other program-controlled features include data formatting capabilities, receive-message and formatted-print buffers, a 5 x 7 or 9 x 7 dot matrix, and an out-of-paper detector.

**MICRODISK DRIVES:** Two microdisk drives are available: Model TP 410, a single drive with 80K bytes of storage; and Model TP 420, a dual drive with 80K bytes of storage per drive, for a total of 160K bytes. Each drive contains its own microprocessor-based controller and power supply, and communicates with the BMT microprocessor subsystem via the serial SIO channel. Average access time for the 5.25-inch ▶

## Burroughs MT 983/MT 993 Modular Display Terminals

▶ diskette is 463 milliseconds with a transfer rate of 15.6K bytes per second.

**MAGNETIC STRIPED CARD READER:** The TP 513 Magnetic Card Reader is a manually-driven card-in-slot reader compatible with ABA or Thrift Industry track reading standards. The device is used to enter a customer's account number or similar information into the system by passing the card through the slot in the reader.

### PRICING

The MT 983 and MT 993 terminals are available for purchase or on a one-, three-, or five-year lease. A one-year warranty applies to all components and peripherals. Rental prices include maintenance and unlimited use of the equipment. A separate maintenance contract is available for purchased units (contact vendor for pricing).

|   |  | Monthly Charge* |              |              | Purchase Price |
|---|--|-----------------|--------------|--------------|----------------|
|   |  | 1-Year Lease    | 3-Year Lease | 5-Year Lease |                |
| MT 983  | 12-inch Display Monitor/Processor                  | \$151           | \$146        | \$143        | \$1,720        |
| MT 993  | 9-inch Display Monitor/Processor                   | 151             | 146          | 143          | 1,720          |
| <b>Keyboards</b>  |  |                 |              |              |                |
| TP 110  | (typewriter keyboard)                              | 13              | 13           | 12           | 275            |
| TP 119  | (data entry keyboard)                              | 13              | 13           | 12           | 275            |
| TP 130  | (typewriter keyboard w/numeric pad, function keys) | 23              | 22           | 22           | 550            |
| <b>Peripherals</b>  |  |                 |              |              |                |
| TP 313  | 90 cps Journal Printer                             | 99              | 96           | 94           | 2,240          |
| TP 410  | 80KB Microdisk Subsystem                           | 75              | 73           | 72           | 1,760          |
| TP 420  | 80/160KB Microdisk Subsystem                       | 103             | 100          | 97           | 2,420          |
| TP 513  | Magnetic Card Reader                               | 22              | 21           | 21           | 500            |
| <b>Peripheral Cables (one required for each peripheral)</b> |  |                 |              |              |                |
| XC 517  | 15-foot Cable                                      | 4               | 4            | 4            | 90             |
| XC 518  | 25-foot Cable                                      | 5               | 5            | 5            | 100            |
| XC 519  | 50-foot Cable                                      | 6               | 6            | 6            | 130            |

\*Includes prime-shift maintenance.■

