



```

SELECT DISPLAY PARAMETER
F1 - HOME POSN
F2 - LF ACTION
F3 - CR ACTION
F4 - BELL
F5 - TAB STOPS
F6 - FIELD OVERFLOW
F7 - PAGE OVERFLOW
F8 - LINES PER PAGE
F9 - FORMS SELECTION
F10 - TAB FIELD HIGHLIGHTER
F11 - ENTER-FIELD TAB TRANSMIT
F12 - BELL ACTION
F13 - ETV ACTION
F14 - FF ACTION
F15 - CR ACTION
F16 - PAGE/TA, DISPLAY FEATURE

        RANGE OF HEXS FOR TERMINAL CONFIGURATION
F1-F16 - INTERPRET A SELECTION FROM THE DISPLAYED LIST
ESC - EXIT FROM THIS LIST
CR - EXIT FROM THIS LIST AND ENTER NEXT PARAMETER GROUP
CONFIC - TERMINATE CONFIGURATION SESSON
  
```

LOCAL
 RECEIVE
 TRANSMIT
 POLL
 ERROR
 MESSAGE WAITING
 BUSY
 POWER


MICRO 4400

A terminal for the future . . . TODAY!



**MICRO
 4400**

A terminal for the future . . . TODAY



MICRO 4400

COMMUNICATIONS TERMINAL

Two distinct trends are apparent in the computer industry today. They are to offload the CPU and communications lines through the use of more intelligent terminals, thus reducing operating costs, and to improve terminal price/performance ratio and flexibility by making use of advances in semiconductor technology. The Micro 4400 communications terminal is a product that continues the trend.

The Micro 4400 has been designed to serve existing market applications as well as future ones. The Micro 4400 is an extremely soft, programmable product which allows an operator to configure the Micro 4400 for a specific application through the keyboard with minimal amount of interaction with the hardware. The incorporation of the Terminal Configuration Manager (TCM) in the Micro 4400 virtually eliminates the need for an operator to change jumper straps inside the terminal. This soft configurability is becoming more essential as a wider variety of communications networks and specialized applications become available.

Terminals of the future will all exhibit vast amounts of intelligence and memory, as does the Micro 4400, so that they can be dynamically configured on an applications basis to take advantage of line cost, varying communications protocols, differing transmission media, and applications software. Networking architectures will change greatly in the 80's driven by the increasing

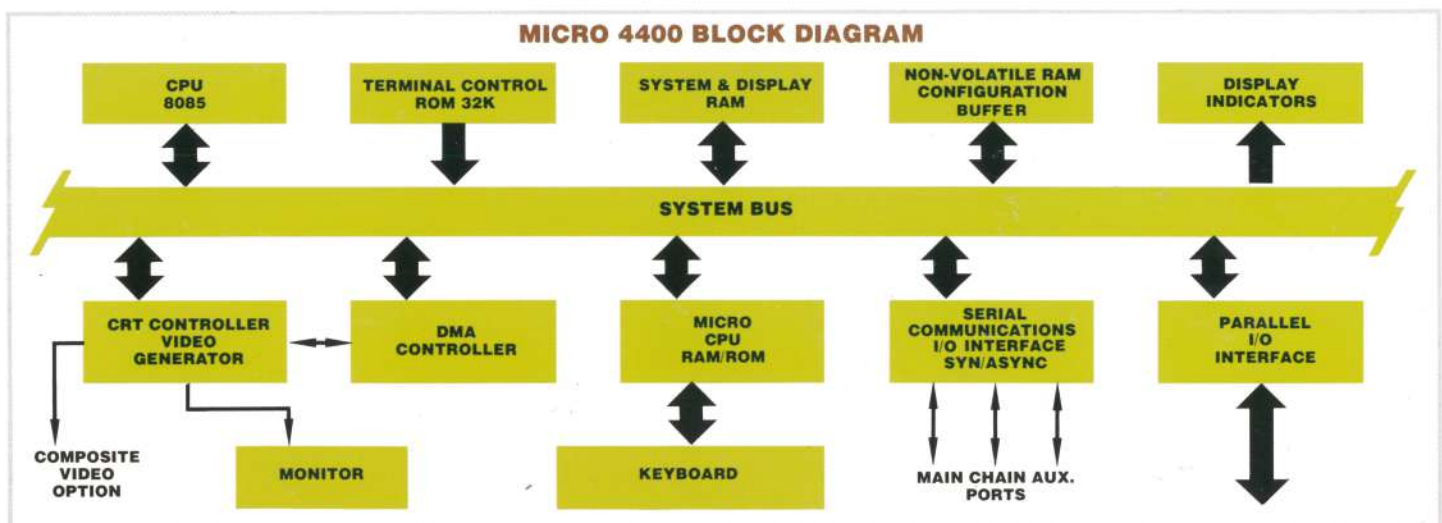


requirements for information processing and automated workstations, "the office of the future." All this will demand that terminals of the future be easily configurable and flexible in interfacing. If terminals cannot be re-configured, substantial investments in equipment will be obsoleted. The cost of ownership is often overlooked in relation to the initial capital outlay. However, as our communications environment becomes more complex and inflation continues, purchase price becomes less significant.

Basic features required in a sophisticated, soft terminal for the 80's will include a capability to share resources like printers and modems along with adding intelligence to the peripheral control functions. The terminal will have to perform functions such as cluster controlling, operating stand-alone

and operating in both polled and contention oriented communications networks. Regardless of application, there will be requirements for graphics display and editing capabilities. Another principal concern to the user will be the availability of extensive terminal self-testing and terminal testing of peripherals including the communications line, both locally and remotely. Storage of canned responses and forms, formerly stored on electro-mechanical media, will be stored in semiconductor RAM memory.

In summary, the terminals of the 80's will be significantly more flexible and powerful than those in the past. They will offer features that will cope with our changing needs and be multipurpose in their nature. The next generation of terminals has arrived — it is the Micro 4400!





Beehive's unique Terminal Configuration Manager (TCM) allows the Micro 4400 to be configured from the keyboard. After storing in EPROM there is no need for reconfiguration on power-up.



COMMUNICATIONS TERMINAL

APPLICATIONS



Line drawing capability aids the operator in recognition of data.



Formatting with visual attributes and logical attributes assists the operator in efficient data entry.

The Micro 4400 has been designed for the applications in which the operator must be able to use the terminal without extensive training. Users to whom this would apply are shipping clerks, typists, bank tellers, and many others where the personnel using the terminal are trained in accomplishing their job function but not necessarily trained in terminal or host computer operation. Additionally, the Micro 4400 provides a 25th displayed line on the screen for use as a status line which includes a 55-character field for user messages that may be used by the host computer to alert the operator of special conditions or it may be used to instruct the operator how to proceed. The Micro 4400 can validate operator input and immediately alert the operator to an error through messages on the status line along with sounding an audio alarm. The validation of operator input by the terminal greatly relieves the host computer and communications line by reducing the unnecessary exchange of erroneous data and error messages. Operator input fields may be specified as follows: Must enter normal; must enter alpha; must enter numeric; must enter right justified; total fill normal; total fill alpha; total fill numeric; total fill right justified; normal; normal alpha; normal numeric; and normal right justified. An invalid entry in any of these fields will invoke

a blinking message on the status line reminding the operator of the correct data type to be entered.

The screen of the Micro 4400 can be segmented by the host computer application program to allow usage of some sections for operator instructions while other screen sections are being used for variable data or text. Variable data can be scrolled through these sections of the screen while the fixed instruction sections remain stationary on the display. Twenty different types of visual display accents are provided in order to visually ease interpretation of data on the screen. Reversed, blinking, highlighted/half intensified, underlined, and secret video with light characters on a dark background or vice-versa are available in all combinations on the Micro 4400. These visual attributes contribute greatly to simplifying operator use of the terminal by helping guide an operator by accenting different data entry fields.

Use of the Micro 4400's sixteen function keys also simplifies terminal operation. Commonly used entries or forms may be downloaded from the host computer and stored under different function keys and, when required, these forms can be invoked

by a single operator key stroke. Both the host computer processing load and the communications line load can be greatly reduced this way. Screen formats need be transmitted only once from the host instead of each time they are needed. Some applications have shown a reduction in communications line load of 60%.

The Micro 4400 printer handling capabilities can also reduce host computer and communications line loading. Print data can be routed directly from a Micro 4400 to a printer (either a dedicated printer or to a printer shared with other Micro 4400's in the chain) without host computer intervention. The Micro 4400 printer interface allows several terminals in the chain to share a common printer. Print jobs are queued so that keyboard activity can continue while waiting for the printer to become available.

Some applications require that several terminals be handled as a logical group. An application program may need, at times, to send a particular message to all terminals in a specific group. Another application may require several terminals in an office to share a common printer. Through use of the Burroughs, Honeywell, and Univac polling protocols, the handing of specific terminals as a group is provided for.



SPECIFICATIONS

DISPLAY FORMAT

24 x 80 Characters

STATUS LINE

25th line of display (80 characters)

CRT

12" measured diagonally, anti-glare

PHOSPHOR

Green, P42

CHARACTER SIZE

Approximately 0.2" high x 0.1" wide

CHARACTER TYPE (Alphanumeric)

128 displayable ASCII characters, each formed within a 5 x 7 matrix in an 7 x 10 cell
Descenders on lower case characters

GRAPHICS TYPE (Line Drawing)

Eleven graphics symbols for drawing forms and continuous lines

DISPLAY REFRESH RATE

50/60 Hz (programmable)

DISPLAY BACKGROUND

Light characters on a dark background or dark characters on a light background (programmable)

VISUAL ATTRIBUTES

Normal, Reverse, Blink, Underline, Half Intensity/Highlight (programmable) and Security

LOGICAL ATTRIBUTES

Normal, Alpha Only, Numeric Only, Must Enter Alpha, Must Enter Numeric, Total Fill Alpha, Total Fill Numeric, Constant, and Right Justified

TABULATION

Variable tabs, storable at power down

CURSOR

Non-destructive block or underline — blinking or non-blinking or no cursor

MEMORY LOCK

The displayable area above the line the cursor is currently on is frozen on the screen

LINE LOCK

The host CPU may selectively designate reserved display lines

CURSOR CONTROL

Up, Down, Left, Right, Home, Carriage Return, Line Feed

CURSOR SENSE

Cursor position is transmitted to the host upon request

CURSOR ADDRESSING

Cursor positioning by column and line

SCROLL

Display data may be moved up or down a line at a time

EDITING OPERATIONS

Insert/Delete Character or Line, Tab and Backtab, Backspace and Character Overwrite. Also a Clear Entry key

ERASE FUNCTIONS

Erase to End of Page
Erase to End of Field
Erase to End of Line
Clear Variable Data
Clear Entire Screen

PARALLEL PRINTER INTERFACE

Supports:— Data Products* 2230, 2260, 2290, M200
— Centronics* 306C and 700 Series
— Diablo* Matrix Series 2300
— Tally* 3000 Series

SERIAL PRINTER INTERFACE

Supports:— Data Products* M200
— Centronics* 306C and 700 Series
— Diablo* Hyterm 1610/1620
— Qume* Sprint Micro 5
— Tally* 1600 Series
— XON/XOFF
— ACK/NAK
— TTY

Shared serial I/O port allows multiple MICRO 4400's to share a common serial printer on a daisy chain

COMMUNICATIONS INTERFACE

Switch selectable for:
Serial RS232/Current Loop
Burroughs* BDI/TDI

TRANSMISSION RATE

50-19.2K Baud (programmable)

PARITY

Even, Odd, Mark, Space

COMMUNICATIONS CODE

ASCII

STOP BITS

1, 1½, or 2

MODEM COMPATIBILITY

Use of optional modem features
Programmable modem signal delays
Compatible with a very wide range of Modem types (Bell 103, 113, 201, 202, 212A, 208, 209)

MULTIPOINT/CLUSTER OPERATION

Will operate as a stand alone terminal or in a daisy chain cluster. The number of terminals in a daisy chain is limited only by response time and the maximum number of allowable terminal addresses. Multiple daisy chains may be dropped from a single communications line

COMMUNICATIONS MONITOR

The terminal may be used in the Monitor Mode to monitor the communications line and display all control code I/O activity

TIME OF DAY CLOCK

A time of day clock that may be set by the host CPU or operator — display on status line.

INDICATORS

The following indicators are provided: Local, Receive, Transmit, Poll, Error, Message Waiting, Busy and Power
Audible alarm upon command error or upon entering a specified column or line.

KEYBOARD

A detachable keyboard with 115 key-stations. Including a numeric pad, cursor control keys, edit keys, alpha lock, and 16 user definable function keys. Specified keys repeat at a programmable rate

FUNCTION KEYS

Sixteen function keys are provided for user definition. Together they may use up to 12K bytes (28K bytes, if the optional RAM is installed)

SELF TEST

Initiated through host CPU control, by operator command, and upon power up. Extensively tests the terminal and optionally the attached modems and printers. Three levels of data and control loopback are provided to allow quick, systematic isolation of terminal, local modem, and remote modem malfunctions

INPUT VOLTAGE AND FREQUENCY

110, 115, 120, 200, 220, 230, 240, 250 VAC ± 10%
50/60 Hz

POWER DISSIPATION

Nominal 50 Watts

ENVIRONMENTAL SPECIFICATIONS

Altitude: 0 to 10,000 feet
Temperature: 0 to 40 degrees C.
Humidity: 10% to 90% (non-condensing)

TERMINAL SIZE

Monitor 20" W X 15.71" H X 26.90" D
Keyboard 20" W X 3.64" H X 12.50" D

TERMINAL WEIGHT

Monitor approximately 48 lb.
Keyboard approximately 12 lb.

TERMINAL FINISH

Textured

SPECIAL ENVIRONMENTAL REQUIREMENTS

None

*Trademarks owned by companies designated.



MICRO 4400

FEATURES

- **Editing/Screen Operations**
Cursor positioning
Character and line insert and delete
Scrolling
Large displayable character set including upper/lower case and line drawing graphics
- **Keyboard**
Detachable keyboard
115 key stations
Numeric/graphics keypad

- User programmable function keys
- **Communications**
Asynchronous/synchronous
50 to 19,200 baud
Compatible with wide variety of modems
Configurable communications timing
- **Printer Interfaces**
Handles most industry standard printer interfaces (both serial and parallel)
Several Micro 4400's can share a single serial printer
Printer may be configured as keyboard or communication printer
Printer operation is buffered and occurs in the background
- **Terminal Configuration Manager (TCM)**
Executed from the keyboard or host CPU

to alter Micro 4400 visual communications, or logical operations. Display, keyboard, printer, emulation type, RAM size, power line frequency, communication, control character action, and password parameters

- **Confidence Self Test**
Extensive self test
TTY diagnostic mode
Monitor mode
Error reports
- **Two Extra Car Slots for Future Beehive Enhancements and User Developed Additions**
- **I/O Electrical Interfaces Switch Selection RS232, BDI, TDI, and Current Loop**

MICRO 4400

OPTIONS

- **Ram Memory**
 - The Micro 4400 terminal is available with either 16K bytes or 32K bytes of RAM memory
- **I/O Interfaces**
 - Parallel Printer

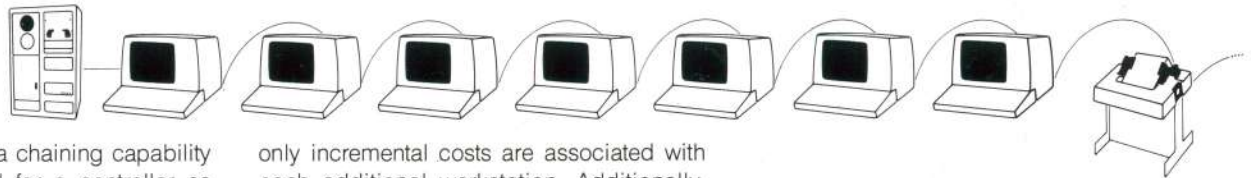
- Serial I/O on the Main Port
RS232C/CCITT V.24
20 MA Current Loop
Burroughs* TDI (*Two Wire Direct*)
- **Chain I/O Port**
 - RS232C/CCITT V.24
 - Burroughs* TDI (*Two Wire Direct*)
 - Burroughs* BDI (*Balanced Differential*)
- **Composite Video Option**
 - RS170 Compatible with the following exceptions:

Adjustable Horizontal and Vertical Sync Delay
Adjustable Horizontal and Vertical Sync Pulse Width
Interface Mode not supported
Horizontal, Vertical and Video Band Width exceeds RS170 Band Widths

- **Emulators (specified at time of purchase)**
 - Burroughs* TD 830 Series

*Trademarks owned by companies designated.

CHAINED TERMINAL CAPABILITY



The Micro 4400 offers a chaining capability that negates the need for a controller as used in many terminal networks. With the flexibility of chaining, the large incremental cost of a cluster controller is never experienced as the network expands. Instead,

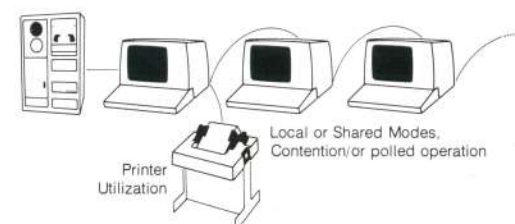
only incremental costs are associated with each additional workstation. Additionally, line length and cost are typically reduced under the chaining method. To achieve maximum cost effectiveness in large network organizations, multiple chains of ter-

minals can be utilized. In most applications within existing networks, the Micro 4400 will offer cost reduction.

EXTENSIVE PRINTER CONTROL CAPABILITY

Micro 4400 may act as an independent intelligent printer controller. This printer control capability is such that the printer may act as a local printer, a shared printer, or as

a communications device receiving data from the host. The communications printer control may be used in polled or contention mode. With this sophisticated built-in control facility, the requirement for intelligent network printers is satisfied in a very economical manner. Now a "dumb" printer with a Micro 4400 becomes an economic solution to a normally expensive problem.





**MICRO
4400**

KEYBOARD



Beehive's Micro 4400 keyboard has been designed to maximize operator comfort and convenience while providing a full complement of features.

The Micro 4400 keyboard is detachable and features upper/lower case, a numeric pad, line drawing keys, sixteen user definable function keys, and 24 special purpose keys (cursor positioning, editing, mode set-

ting, etc.). The key repeat rate and delay before repeat are both programmable. By changing program tables stored in ROM, keyboard key codes may be redefined to tailor the terminal to a specific application.

The sixteen user definable function keys may be programmed to contain either commonly used text strings or data entry forms. To call up the text string or form, the

operator has only to depress a single function key. Communications lines overhead may be drastically reduced through the use of function keys.

Micro 4400's unique Terminal Configuration Manager (TCM) allows almost all terminal configuration to be accomplished through keyboard entries.

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