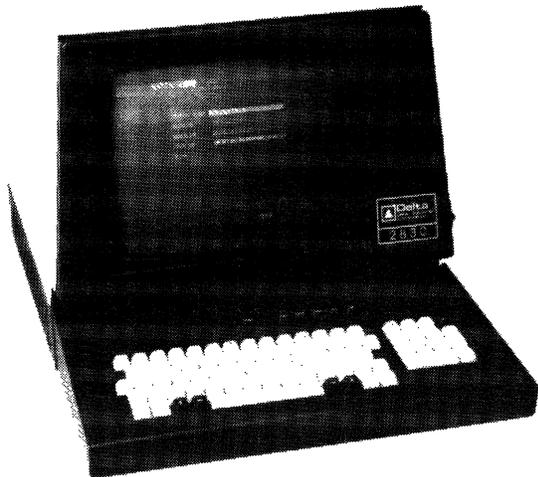


Delta Data Systems Model 4050 and 2830 Display Terminals



Delta's Model 2830 provides emulation of Burroughs TD Series 831 and 833 terminals. It replaces the Model 4050B and features completely redesigned cabinetry, keyboard, display, and other components.

MANAGEMENT SUMMARY

Delta Data's current terminal offerings consist of the non-programmable Models 4050 and 2830, which are covered in this report, and the 7000 Series and System 700 intelligent terminals, which are covered in Report C21-369-101.

The Model 4050 is currently available in two versions that provide Honeywell VIP 7700 and Univac Uniscope 100/200 emulation, respectively. In addition, the Model 4050 retains some of the special features of Delta 4000 Series (of which it is the sole survivor), such as a PROM-encoded keyboard that supports custom layouts (including special function keys for specific user applications), a 2K-byte printer interface buffer, and up to 2 pages of display memory.

The Model 2830 provides emulation of Burroughs TD 831 and TD 833 display terminals. It features fully-upgraded Delta componentry, including an 8085 microprocessor, a larger display with higher character resolution, an enhanced keyboard, and redesigned cabinetry. Many features that are optional on the 4050 are standard on the 2830, including concatenation, communications line monitoring, and Teletype compatibility.

USER REACTION

In the 1979 survey of alphanumeric display terminal users, Datapro received responses from two Delta Data terminal users. In addition, Datapro conducted telephone interviews with three other users whose names

Video display terminals that emulate three popular mainframe vendors' terminals.

Model 4050 is available in two versions that provide emulation of Honeywell VIP 7700 or Univac Uniscope 100/200 units. Model 2830 provides emulation of Burroughs TD 831 and TD 833 terminals.

Standard features include editing functions, format protection, program function keys, operator-selectable data rates, and multi-point operation. Options include printer interfacing with or without buffering, a line monitoring function and display memory expansion.

Single unit prices range from \$2,950 for Model 2830 to \$3,960 for Model 4050 with Univac emulation. Quantity discounts are provided for OEM and end-user purchases. Lease terms are available for two to five years.

CHARACTERISTICS

VENDOR: Delta Data Systems Corporation, Woodhaven Industrial Park, Cornwells Heights, PA 19020. Telephone (215) 639-9400.

DATE OF ANNOUNCEMENT: Model 4050—April 1976; Model 2830—June 1979.

DATE OF FIRST DELIVERY: Model 4050—May 1976; Model 2830—September 1979.

NUMBER DELIVERED TO DATE: Over 4000 (4000 Series); over 1000 (Model 2830).

SERVICED BY: Delta Data Systems and Sorbus.

MODELS

Delta's Model 4050 and 2830 terminals are stand-alone microprocessor-based display terminals with typewriter- or (optionally) data entry-style keyboards. They are designed for use in a multidrop communications environment and are microprogrammed to emulate specified terminals provided by Burroughs, Honeywell, and Univac. The two models differ as follows:

- Model 4050—incorporates Delta 4000 operation with either Honeywell VIP 7700, Univac Uniscope 100 or 200 (including the multiplexer interface capability) or other user-specified emulation. Optionally, a Teletype emulator can be added, permitting the operator to alternate between the primary mode of operation and Teletype mode.
- Model 2830—provides operator-selectable emulation of a Burroughs TD 831 or 833 terminal and a Teletype 33/35. The 2830 provides a newly designed CRT monitor, keyboard, and cabinet, and includes as standard many

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▷ were supplied by Delta Data. Together, the users reported on a combined total of 117 Delta 4050 terminals. Their ratings follow.

	Excellent	Good	Fair	Poor	WA*
Overall performance	2	3	0	0	3.4
Ease of operation	3	2	0	0	3.6
Display clarity	3	2	0	0	3.6
Keyboard feel & usability	1	4	0	0	3.2
Hardware reliability	0	4	1	0	2.8
Maintenance service	0	1	2	1	2.0
Technical support	1	2	1	0	3.0

*Weighted Average on a scale of 4.0 for Excellent.

As is indicated by the ratings, Delta Data display terminal users are generally satisfied with the performance of their equipment. Two users specifically mentioned cost of the terminals as a strong point. Another user said that the unit was so reliable that they didn't have to carry a maintenance contract and thus were able to realize a cost savings in that area. Flexibility of applications was also cited as an advantage.

For the most part, negative comments were of a minor nature. Two users identified the size of the unit ("too bulky") as a disadvantage. (Delta has pointed out to us that the 2830, which was not rated by these users, provides a significantly more compact cabinet.) One user mentioned that response time for maintenance had been a little slow. □

▶ features available as options on the 4050, such as the line monitoring mode, concatenation and auto-bypass capabilities, and Teletype emulation.

Either terminal can be daisy-chained (concatenated) with other terminals on a single communications line, and can provide an auto-bypass capability that allows continuous operation of downstream terminals without recabling when one terminal in the string is down. Switch-selectable (Model 4050) or keyboard-selectable (Model 2830) addressing schemes permit multiple addresses to be stored for individual terminals or groups of terminals.

The communications line monitor feature (optional on the 4050, standard on the 2830) allows either model to be placed into a full duplex mode in which the traffic of all upstream and downstream terminals in the chain may be monitored. Diagnostic information used for system debugging, start-up, and troubleshooting is displayed on the screen.

An RS-232C printer port is optionally provided for attachment of a customer-supplied printer. The printer interface can be bufferless, or provided with a 2K byte print buffer. The printer can operate as an operator-controlled local copy device, or on-line; on-line mode operation requires that the printer be equipped with its own communications capabilities, and permits data to be transmitted to the printer independently of keyboard/CRT operations. Delta supplies a Centronics Model 761 teleprinter (Delta Model 6761) for use with its terminals.

The 4050 optionally permits attachment of additional remote video monitors.

TRANSMISSION SPECIFICATIONS

Transmission is asynchronous or synchronous in half- or full-duplex mode at selectable data rates including 110, 150, 300, 600, 1200, 2400, 4800, and 9000 bits per second. An 1800 bps data rate can optionally be substituted for the 600

bps rate on the Model 4050; 1800 bps transmission is among the standard data rate selections on the Model 2830. An external clocking mode allows the user to provide timing externally. Odd, even, or no parity is operator-selectable. The unit code structure for asynchronous operation is 11 (at 110 bps) or 10 bits per character, including one start bit and one or two stop bits; for synchronous operation, the unit code structure contains 8 bits. The 7-bit ASCII code is used. An RS-232C (or optionally, a 20 or 60 mA dc current loop) communications interface is provided. Asynchronous and synchronous modem bypass options (4050 only) provide clocking that permits the terminal to be directly connected to a host without a modem. Model 2830 permits substitution of a Burroughs-compatible two-wire direct interface for the RS-232C interface, and provides an option for operator-selection between ASCII transmission parameters and the Burroughs TDI unit code structure and interfacing.

DEVICE CONTROL

Transmission can be performed on a character-by-character basis as each character is keyed or on a block basis where a message or a full or partial page is transmitted. Received and keyed commands initiate the execution of all terminal functions.

Cursor control functions position the cursor up, down, left, right, and home. The cursor is also positioned by tab, back tab, return, line-feed, End-of-Text, and space functions. Cursor sending and addressing is standard. The End-of-Text function positions the cursor at the character position following the last character in memory.

Tab functions allow setting and clearing tabs, tabbing forward, and tabbing backward. On the Model 2830, a fixed tab function that automatically sets tabs at every eighth position is also provided.

Edit functions include character and line insertion or deletion, partial or full memory erasure, and line erasure. The Model 2830 provides two additional editing functions: Line Movement and Search Mode. The Line Movement function permits a line of displayed data to be interchanged with the line above or below it. Search Mode permits a specified character or character string to be identified wherever it appears in the displayed data, and replaced with a new character or character string.

Paging functions permit the selection of the next page or previous page for display and enables paging or scrolling up or down. An automatic page-up mode scrolls all data up when entry continues after the last line is filled. Model 2830 permits the user to enable/disable automatic page wraparound, which scrolls all data up and moves the top display line to the bottom of the screen when data entry continues after the last line is filled.

Data can be entered in Regular, Format, or Enter Program Modes. Regular Mode provides for normal character-by-character data entry. In Format Mode, data fields can be set up as protected or unprotected. Unprotected fields can be right- or left-justified. Protected fields can be designated as transmittable or non-transmittable. Enter Program Mode permits ESCape sequences and control codes to be displayed/transmitted without the terminal acting on the commands and is used to perform hardware and software diagnostics.

On the Model 2830, terminal addressing schemes, transmission specifications, configuration alternatives, and other microprogrammed functions are stored in electronically alterable read-only memory (EAROM); a parameter menu may be called to the display screen and parameters changed via keyed commands.

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► An audible alarm sounds when a control code (Control G) is received or a character is keyed at line position 73 on Model 4050 or at an operator-selected position on Model 2830.

Data compression prevents transmission of characters displayed to the right of a delete code on a line.

COMPONENTS

MODEL 4050 CRT DISPLAY UNIT: A 14-inch (diagonal measurement) CRT with a display arrangement of 25 lines of 80 characters each, for a total screen capacity of 2000 characters. Display memory capacity is 2048 characters. However, in emulation mode, only 1920 characters can be displayed/stored by the user. The character set consists of 224 displayable ASCII symbols including 96 upper and lower case alphanumerics, punctuation marks, and textual symbols, 32 symbols for control codes, and 96 representative symbols for Escape sequence codes. Each character is formed via a 5-by-7 dot matrix. Data is displayed in green (P31 or, optionally, P4 phosphor) on a dark background or in negative video (dark characters displayed on a green background). The cursor is displayed as a blinking underline or block. Highlighting features include blinking, reverse video, and both combined. Data may also be blanked for security.

MODEL 2830 CRT DISPLAY UNIT: A 15-inch (diagonal measurement) CRT with a display arrangement of 24 lines of 80 characters or a total of 1920 characters. The display memory can store one, or optionally two, 1920-character pages of data. Two additional lines at the bottom of the screen provide status information. The character set consists of 128 displayable ASCII symbols. Each character is formed via a 7-by-9 dot matrix in a 10-by-12 dot field. Data is displayed in green (P31 phosphor) on a dark background or in negative video (dark characters displayed on a green background). The cursor can be operator-selected as a blinking or non-blinking block or a blinking or non-blinking underline. Highlighting features include blinking, reverse video, high/low intensity, and underlining. Data may also be blanked for security.

KEYBOARD: A typewriter-style keyboard with separate numeric pad that can generate any of 128 ASCII character codes. A "Source" (i.e. data entry-style) keyboard is optionally available. The 4050's keyboard can be attached (standard) or detached (optional). A detached keyboard is standard for the 2830. All keys feature repeat action, which can be varied between 13 and 80 characters/second (Model 4050 keyboard) or repeated at 12 characters per second (Model 2830 keyboard). Eight program function keys, five cursor control keys, and separate tab, edit, and paging keys are standard. Eight or fourteen additional program function keys can optionally be added to the keyboard.

DELTA 6761 PRINTER: A serial, impact, dot matrix teleprinter with an incremental, bidirectional, logic-seeking printhead that prints at 60 characters per second. The print buffer holds up to 256 characters, and can optionally be expanded by 7168 characters. Characters are formed by a 7-by-7 dot matrix, or optionally by a 5-by-7, 9-by-9, or 9-by-7 dot matrix. A 64-character (upper case only) ASCII set is standard, but optionally expandable to 96 or 128 characters. An adjustable tractor feed and 2-channel vertical forms mechanism are standard. Horizontal pitch and vertical spacing are 10 characters per inch and 6 lines per inch, respectively. Five-part (original plus four copies) pin-fed continuous forms of a maximum width of 17.3 inches may be printed. Communications capabilities permit operation independent of the keyboard/display and allow for receipt of asynchronous data transmission at up to 1200, or optionally up to 9600, bits per second.

PRICING

The Delta Data Model 4050 and 2830 terminals are available for purchase or on a two, three, four, or five year lease, which includes maintenance. Operating or full-payout leases are available. A separate maintenance contract is available for purchased units. Quantity discounts are also available for purchased units. Installation is priced at \$80 per terminal.

	Monthly Charge*		Purchase	Monthly Maint.
	2-Yr. Lease	5-Yr. Lease		
Model 4050H; emulates Honeywell VIP 7700	168	139	3,600	38
Concatenation, Auto-Bypass, and Variable Field Parameters	4	3	100	—
Printer Interface with Data Communications Buffer	13	11	270	3
Model 4050U; synchronous transmission; emulates Univac 100/200	181	149	3,960	38
Multiplexer Interface	5	5	55	3
Concatenation and Auto-Bypass	4	3	110	—
Model 4050H/U Options—				
Detached Keyboard	7	5	175	—
Printer Interface (without buffering)	6	5	100	2
Line Monitor	7	5	175	—
Source Keyboard	4	3	100	—
Synchronous/Asynchronous Switch; required for Teletype emulation on synchronous units	5	4	125	—
Teletype emulation	5	4	125	—
Remote Monitor Drive	NA	NA	75	2
1800 Bps Transmission; replaces 600 bps rate selection	3	3	75	—
Asynchronous Modem Bypass	3	3	75	—
Synchronous Modem Bypass	3	3	75	—
Security Keyboard Lock	5	4	150	—
Model 2830; includes concatenation, auto-bypass, synchronous/asynchronous switch, Teletype emulation, line monitor mode, and detached keyboard	132	108	2,950	25
Model 2830 Options—				
Expanded Memory	12	10	325	—
Printer Interface	5	5	75	—
Two-wire Direct Interface; in lieu of RS-232 interface	NC	NC	NC	—
TDI/RS-232 Switch; includes both RS-232 and TDI interfaces	2	2	40	—
Source Keyboard	NC	NC	NC	—
Security Keyboard Lock			Contact vendor for pricing	
Model 6761 printer	NA	NA	2,595	42

*Includes maintenance.

NA—Not available. NC—No charge.■

