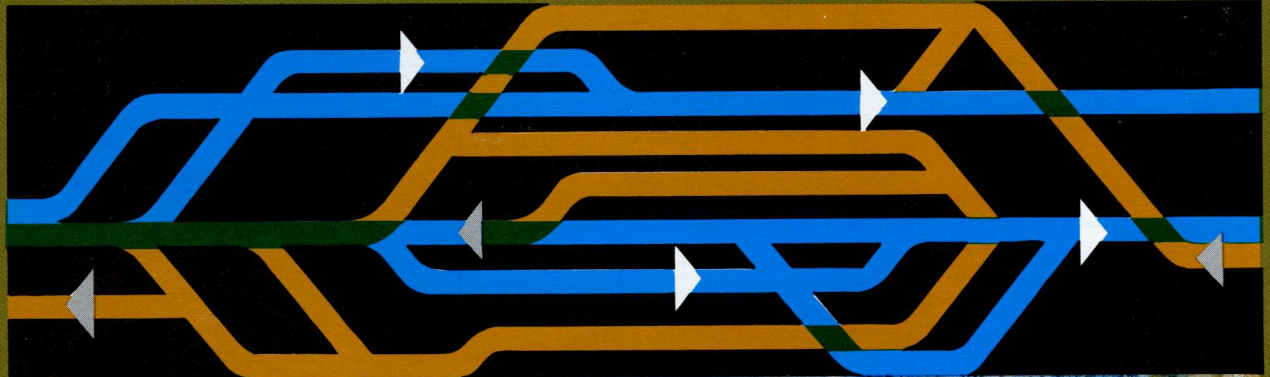




SERIES 500 DATA-SCREEN

Terminal Systems

MAN MACHINE INTERFACE



TEC Series 500 DATA-SCREEN* Terminals . . .

VERSATILE

Designed to provide instant access to most computers; available with DATA-PHONE® or direct computer coupling.

EASY TO USE

Designed with the operator in mind; simplicity of operation eliminates need for special training.

MODULAR

Modern computer type design lets you select from a wide variety of options and configurations to meet your exact requirements.

EASY ON YOUR EYES

Large, sharply defined characters stand out in striking contrast to the dark screen background.

FLEXIBLE

Design may include hard copy printer adaptor to extend display terminal capacity.

EXPANDS WITH YOUR SYSTEM

TEC's multi-station controller may be used to control up to 32 CRT terminals and, in many applications, results in a more economical information display system. Multi-station terminals and controllers are described separately.



a family of low cost information display terminals

COMPACT

A completely self-contained terminal in an attractive, compact enclosure, connected to an optional keyboard.

ECONOMICAL

Fast, easy to use, these terminals provide economical access to computer stored data for efficient inquiry/response.



FUNCTION KEYBOARD

Custom designed to facilitate entry of special command and control functions.

FIXED MESSAGE INDICATORS

Up to 64 DATA•PANEL® Display System indicator modules representing status condition, operator sequence instructions or process alarms are available in a variety of sizes, shapes and colors customized to your application.

INTERFACE

Customized interface adaptors designed to meet your system requirements.

ENCLOSURE

TEC will custom design enclosures to your styling requirements.

TEC's new Series 500 DATA-SCREEN Terminals are designed to provide efficient, fast, low-cost computer input/output. These terminals utilize advanced solid-state and integrated circuitry to provide an economical answer to today's information inquiry/retrieval requirements.

Whatever your application — source data entry, terminal inquiry/response, process control, management information — the Series 500 Terminal can provide fast, economical access to on-line, real time, data processing systems. Whether your computer is in the next room or across the continent, the Series 500 Terminal can be used with equal ease. Message composition, text editing and keyboard entries are all local, off-line tasks. Complete message buffering within the Series 500 Terminal eases programming and message switching tasks. Your terminal is only on-line to the computer or communications facility during actual data transmission, easing the processing load of the computer and reducing time-sharing costs.



Series 500 Terminals are completely self-contained in an attractive, functional enclosure and utilize a 12-inch, rectangular CRT display tube, a display buffer and refresh memory, control and editing logic, input/output interface adaptor, and an optional electronic keyboard.

Designed to provide low-cost, reliable computer inquiry, the Series 500 Terminal keyboard and controls can be mastered quickly. All operations and editing features have been designed for easy operator understanding and simplified data entry. Human factors design provides a keyboard with touch, key travel and arrangement very similar to electric typewriter keyboards. Optionally, indications are available for right hand margin and last line or end of page identification. An audible key strike signal, optional, is activated with any keyboard entry and accurately simulates the normal typewriter key sound. Tests show that this signal greatly increases data entry typing speed, reduces operator fatigue and improves operator acceptance.

Two methods of data transmission — page mode and segmented mode — provide efficient dialogue between computer and terminal under varying usage requirements. The page mode consists of transmitting the complete screen or page of text from the upper left of the screen to the "End Of Text" symbol. If the "End Of Text" symbol is in the last character position of the last line, the complete page is transmitted. In the segmented or conversational mode of operation, the operator brackets any portion of the text displayed on the CRT screen and transmits only that portion. These methods of transmission lend themselves to efficient utilization of communications facilities and minimize operator interaction when communicating with the computer.

A 12-inch rectangular CRT is used in the Series 500 Terminal to display 32 characters per line in eight lines (256 characters, Model 540) or in 16 lines (512 characters, Model 550) or to display 50 characters per line in 20 lines (1000 characters, Model 560)*. Character size is adjustable during installation to suit operating environment.

*Model 530 uses an 8-inch rectangular tube to display 16 characters per line in 8 lines (128 characters).

Controls and indicators include:

- Brightness control — permits adjusting CRT luminescence to provide desired eye comfort under varying light conditions.
- Power OFF-ON switch
- Power ON indicator
- Error indicator — triggered by the I/O control and cleared by the operator it indicates that one of several error conditions has occurred
- "WAIT" indicator — tells the operator that the terminal is transmitting or receiving data from the computer and that the keyboard is temporarily deactivated. The indicator is cleared when the input/output operation is completed, returning control of the terminal to the operator.

INTERFACE

Series 500 Terminals offer a complete display system ready to interface to your computer or communication system.

Interface for direct computer coupling consists of USASCII coded character lines for high speed data transfer in a half duplex mode at rates in excess of 38K characters per second.

For remote operation, Series 500 Terminals can connect directly to DATA-PHONE modems. Transmission is synchronous at data rates up to 4800 bits per second using an 8-bit character format. Asynchronous transmission using a 10 or 11-bit character format is available as an option.

This versatile interface capability ensures compatibility with most digital computer systems. Custom designed interface adaptors can be provided on special request.

FEATURES

TEC'S DATA-SCREEN Terminals provide a full range of information display and control features to give you maximum flexibility and reliable performance at low cost.

Additional keyboard and option features are described on the following page, while available configurations and options are outlined on page 8.

Consider these outstanding features provided on every Series 500 Terminal

- Large characters — viewing screen provides greater message capacity; as many as 1000 characters may be displayed. Characters as large as 0.26 inch may be selected for easy, error-free viewing.
- Split Screen — unique addressability features of the Series 500 Terminal allow efficient, multiple message display.
- Conversational Mode — allows convenient, efficient dialogue between operator and computer. Multiple inquiry/response displays are unaffected by succeeding dialogue. You send only the message you want, reducing transmission and computer processing costs.
- Repeat — offers rapid, repetitive entry of any character or movement of the cursor. Extremely useful in message or form composition.
- Backspace — moves the cursor one position back. Identical to that of a standard typewriter.
- Carriage Return — erases unused portion of line to righthand margin.

- Screen Erase — a single computer command or pushbutton clears the entire screen.
- Full Screen Transmission — allows complete page of text to be transmitted.
- Margin Identification — positive identification of left screen margin.
- Special Symbols — display positively any carriage return, erroneous character, start of message and end of message.

KEYBOARD FEATURES

- Separate Keyboard — permits operator to move and orient keyboard.
- Electronic Keyboard — offers convenient, familiar key arrangement and simple straight-forward controls. An electronic interlock feature eliminates erroneous entry when two or more keys are pressed simultaneously.
- Keyboard Mounted Indicators — display positive verification of power ON, transmission mode and error condition.

EDITING FEATURES

Three editing module options give the Series 500 Terminal a wide range of computer controllable functions and permit fast, accurate message composition by relatively inexperienced operators.

Logical keyboard and control arrangement improves operator efficiency. Control logic, for computer interface, is easily programmed to simplify software requirements.

Editing features are:

- Cursor
Non destructive and blinking to indicate point of data entry. May be moved anywhere on the screen by five cursor controls. A "Home" key/function returns the cursor to upper left. Repeat function speeds cursor movement.
- Erase Feature
Three erase functions provide Screen Erase, Erase Rest Line and Erase Rest Page.
- Insert/Delete Features
Insert functions are Insert Character and Insert Line. Both functions move displayed characters or lines to permit text manipulation.

Delete functions are Delete Character and Delete Line. Realigned characters move to fill spaces left by deleted characters or lines.

Computer controlled Roll and Scroll screen displays (in which the message on the screen appears to be rolling up or down past the viewer) are achieved by using the line insert/delete controls.

■ Format Features

Completely flexible tab set for tabular formatting.

Characters, words or lines, in a completely random pattern — or the entire screen display — will blink when activated on computer command.

Horizontal split screen permits simultaneous display of two or more messages controlled separately.

Fixed and variable field screen display can be combined to present fixed headings with variable data filled in by operator or computer.

Line addressability offers direct selection of a displayed line by computer initiated command and reduces the number of commands usually required to position text on the screen. Line address, when combined with the Tab function, gives the computer rapid access to any character position on the screen.

KEYBOARD

TEC's Electronic Keyboard has the touch and key arrangement of an electric typewriter. The keyboard assembly contains alphanumeric keys arranged in typewriter style. Editing controls are

arranged for easy utilization on either side of the keyboard assembly with terminal status indicators and transmit keys above the keyboard. An electronic interlock is provided to ensure that false codes are not generated when two or more keys are pressed simultaneously. An optional key "strike" sound is available which enhances operator typing rhythm and increases typing speed.

Optional editing function keys permit fast, accurate message construction.

Keyboard indicators and switches provide operator control of the terminal and report terminal status.

Logically arranged cursor and screen erase controls aid text composition.



REPEAT key provides repetitive entry of any character or cursor movement.

TEC's compact electronic keyboard is arranged in standard typewriter configuration for alphanumeric characters.

Editing and control functions are separated from the alphanumeric keys to facilitate error-free operation.

STX — start of text identifier for text segment to be transmitted.

OPTIONAL FEATURES

■ Printout Adaptor

Teletypewriter printout of information displayed on the CRT screen is available. This option provides an additional logic assembly within the terminal. Simply connect to a Teletype Model 33 or 35 receive-only printer and hard copy is produced on command.

■ Asynchronous Data Transmission

A TEC Interface Adaptor can be provided for DATA-PHONE® operation with Series 202 Data Sets (or equivalent) at either 1200 or 1800 bits per second. This self-clocking interface adaptor provides data keying to the data set with appropriate start/stop framing bits and accepts unlocked 10 or 11-bit character inputs.

■ Keyboard Indicators

And end-of-line indication and audible tone occurs at 4 or 8 character positions prior to the end of line. When text is being entered on the last line of the screen, a last line indicator and audible tone warns the operator of this condition. With this option an audible key "strike" sound is simulated for increased typing speed.

In addition to the wide selection of editing features and keyboard configurations, options are available to complete a truly customized Series 500 DATA-SCREEN Display Terminal at significantly lower costs than competitive systems.

■ Fixed Message Indicators

As many as 64 fixed messages or indications can be provided (adjacent to the CRT display) by using TEC's DATA-PANEL® Display System. These backlit indicators are customized to present messages in a variety of shapes, sizes and colors. The fixed message indicators and the CRT screen are mounted behind a dark, transparent front panel that produces high contrast display.

Because the fixed message indicators are customized, the standard configuration does not include this portion or its associated interface. These customized display modules are available on request and provide a very economical means of creating an effective interactive man-machine console system.

■ Message Parity Check

In addition to the horizontal parity-by-character check, an optional message parity check is available which provides longitudinal message checking.

SPECIFICATIONS

CHARACTERISTICS	MODEL 530	MODEL 540	MODEL 550	MODEL 560
CHARACTERS	128	256	512	1000
CHARACTERS PER LINE	16	32	32	50
LINES	8	8	16	20
CHARACTER HEIGHT	0.375 nominal	0.26 nominal	0.26 nominal	0.18 nominal
CHARACTER WIDTH	0.25 nominal	0.175 nominal	0.175 nominal	0.120 nominal
CHARACTER SPACING	0.125 nominal	0.098 nominal	0.098 nominal	0.055 nominal
LINE SPACING	0.125 nominal	0.162 nominal	0.162 nominal	0.157 nominal
CHARACTER REPERTORIE	Up to 64 alphanumeric and special symbols	Up to 68 ASCII alphanumeric and special symbols		
CRT TYPE	8-inch rectangular tube	12-inch rectangular tube		
CRT PHOSPHOR	P4(white), P31(green) Optional	P4(white), P31 (green) Optional		
CRT VIEWING AREA	6 inches by 4 inches	8¾ inches by 6¾ inches		
REFRESH RATE	63 Hertz	60 Hertz synchronized with power source		
CHARACTER GENERATION METHOD	Continuous line strokes	Continuous line strokes		
BRIGHTNESS	37-foot lamberts, nominal	37-foot lamberts, nominal		
DEFLECTION	Magnetic	Magnetic		
FOCUS	Electrostatic	Electrostatic		
STORAGE METHOD	Ferrite Core	Ferrite Core		
SYSTEM CODE	ASCII, others on request	ASCII, others on request		
INTERFACE	Integrated circuit logic	EIA Standard RS-232B Input: +2.7 to +5.0 VDC, Logic "1" +0.6 to 0 VDC, Logic "0" Output: +3.8 to +5.0 VDC, Logic "1" +0.6 to 0 VDC, Logic "0"		
TRANSMISSION RATE	Parallel I/O transfer rate up to 38.5K characters per second	Serial: 2000, 2400 and up to 4800 bits per second synchronous with 8-bit character format Parallel: I/O transfer rate up to 38.5K characters per second. Higher rates on request.		
KEYBOARD	ASCII coded. Alphanumeric plus editing and control keys and status indicators	ASCII coded. Alphanumeric, plus editing and control keys and status indicators. Compatible with enclosure design, but separate. Can be operated up to 10 feet from terminal.		
INPUT POWER	115 VAC ± 10%; 60 Hertz 150 watts	115 VAC ± 10%; 60 Hertz Less than 200 watts		
OPERATING TEMPERATURE	+10°C. to +40°C.	+10°C. to +40°C.		
SIZE	20" wide x 12¼" high x 24" deep	Terminal only: 20" wide x 14½" high x 20" deep Keyboard: 20" wide x 4" high x 7" deep		

CONFIGURATIONS (Models 540, 550 and 560)

STANDARD MODULES	Description	Minimum Prerequisite Module
Module Number -01	Basic Display Unit with Parallel Interface: Includes refresh memory, character generator, control logic, power supply, enclosure and basic editing module with logic for cursor, repeat, backspace, screen erase, segment mode, page mode, carriage return and margin stop.	None
-02	Serial Synchronous Interface Adaptor: Replaces parallel interface to accommodate a serial 2000, 2400 or up to 4800 bits per second, 8-bit character format.	-01
-03	Inquiry Editing Module: Includes basic editing module plus line erase, partial screen erase, insert character and/or line, delete character and/or line, and tab.	-01
-04	Extended Editing Module: Includes -03 Inquiry Editing Module plus character or message blink and format protected features.	-01
OPTIONAL MODULES		
-05	Basic Keyboard: 50 alphanumeric key array, five cursor keys, screen erase, power ON, error and wait status indicators, transmit controls and false code lockout.	-01
-06	Editing Keyboard: Includes -05 module plus nine additional editing and control keys.	-03
-07	End of line, last line visual indicators and audible tone: Also generates key strike sound.	-05
-08	A Serial Asynchronous Interface Adaptor: 10 or 11-bit character code, 1200 or 1800 bits per second; 7-bit ASCII code plus even parity plus one start bit and one or two stop bits. Other configurations available on request.	-01
-09	DATA-PANEL® Display System Features: Backlighted message displays, custom designed.	-01
-10	Enclosure Color Option: (specify)	-01
-11	Delete Enclosure: For custom installation or rack mounting.	-01
-12	Interface Adaptor Customized for Application: (on request)	-01
-13	Message Block Check:	-01
-14	Teletypewriter Adaptor for Teletype Model No. 33 or 35: (receive only)	-05

TEC . . . your complete source of information display and control devices . . . let us help you with your requirements. Contact your local TEC-Rep or write direct.



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MODEL 550

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TEMP

PRESS

CONTROL

STOP

RESET

TEC 550

TEC'S SERIES 500 DATA-SCREEN
DISPLAY TERMINAL

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