# Control Data 722 Display Terminal



*The Control Data 722 Display Terminal is a microprocessor-controlled, asynchronous terminal for both local and remote data processing. It is intended to be the first member of a new family of operator-oriented terminals from CDC.*

A microprocessor-based, Teletype-compatible display terminal for use with Control Data computer systems.

Standard features include a 12-inch (diagonal) display screen; a 1920-character display format arranged in 24 lines of 80 characters each; a typewriter-style keyboard featuring a numeric pad and function keys; data highlighting; self-test; switch-selectable transmission rates from 110 to 19,200 bps; and an advanced operating mode for extended control functions. The terminal is available with an RS-232-C or 20mA interface.

Purchase price for the 722 is $1,575; one- and three-year leases are also available.

## MANAGEMENT SUMMARY

The Control Data 722 Display Terminal is intended to be the first member of a new 720 Series of terminals, designed to replace the company's older 750 Series. The 722 is line code compatible with Control Data's 752 Display Terminal, while offering more operator-oriented features. The 722 is compatible with all Control Data systems that support TTY-compatible, asynchronous terminals.

The 722 is microprocessor-based, and can be used in both local and remote environments. The terminal offers character mode transmission, and features operation in either page or scroll modes. In addition, the 722 can also operate in advanced mode. This mode offers extended control functions such as page print, underscore highlighting, insert/delete line, field scroll, and line graphics.

Standard on the 722 is a 12-inch diagonal display screen with a maximum display capacity of 1920 characters. Characters are displayed in white on a dark background, and the full 128-character ASCII set is displayable. The typewriter-style keyboard is attached, and contains 85 keys, including 12 function keys and a 12-key numeric pad. N-key rollover is standard. Data highlighting features include dual intensity and blinking. Transmission rates are switch-selectable at speeds up to 19,200 bits per second. The 722 is available with an RS-232-C or 20mA current loop interface; also provided is an interface for the attachment of an optional impact (Control Data 755-21) or non-impact (Control Data 753-11) printer.

Control Data designed the 722 to be compact (14.8″ high x 16.9″ wide x 21″ deep) and lightweight (37 pounds). The terminal is convection-cooled for quiet operation.□

## CHARACTERISTICS

**VENDOR:** Control Data Corporation, P.O. Box 0, Minneapolis, MN 55440. Telephone (612) 853-8100.

**DATE OF ANNOUNCEMENT:** February 1981.

**DATE OF FIRST DELIVERY:** February 1981.

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

**SERVICED BY:** Control Data Corporation.

### CONFIGURATION

The Control Data 722 Display Terminal is a stand-alone, desk-top unit with an attached keyboard. Two models are available: the 722-10 includes an RS-232-C interface, while the 722-20 contains a 20mA current loop interface.

### TRANSMISSION SPECIFICATIONS

Transmission is asynchronous, in half- or full-duplex modes, at switch-selectable transmission rates of 110, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, and 19,200 bits per second. The 10- or 11-bit ASCII code is used; at 110 bps, the word size is 11 bits, while at all other speeds word size is 10 bits. Parity is switch-selectable at odd, even, mark, or space. The 722-10 is equipped with an RS-232-C interface; the 722-20 is equipped with a 20mA current loop interface.

### DEVICE CONTROL

The 722 transmits data character-by-character as it is keyed. Local and remote command control is provided. The unit can operate in either scroll or page mode; X-Y coordinate addressing is available in page mode.

Cursor controls move the cursor up, down, left, right, home, and return. The cursor appears as a blinking underline, and is both addressable and readable. An audible alarm sounds as the cursor moves to the 73rd character position or, in the page mode, enters the 24th (bottom) line. ➤

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▶ Video attributes allow data to be highlighted by blinking or by using dual intensity. A self-test mode is provided for diagnosing terminal problems.

An advanced mode of operation is also provided for extended control function availability. Advanced mode features include: page print command; insert/delete line commands; field scroll commands (to move data up or down in a specified area); and underscore highlighting. A 31-character line drawing set is also available in advanced mode, accessible via control code sequences.

## COMPONENTS

CRT DISPLAY UNIT: A 12-inch (diagonal measurement) CRT with a display capacity of 1920 characters, arranged in 24 lines of 80 characters each. Characters are displayed in white on a dark background, and are formed utilizing an 8 x 10 dot matrix. The cursor is displayed as a blinking underline. The full 128-character ASCII set is displayable, including 33 control code characters. A 31-character line drawing set can be displayed in advanced mode. Display enhancements include half- or full-intensity, and blinking.

KEYBOARD: An 85-key, typewriter-style, attached keyboard. Included are 12 special function keys, and a 12-key numeric/cursor control pad. An N-key rollover feature is standard to prevent loss of input data.

755-21 IMPACT PRINTER: A desk-top line printer which can be optionally used with the 722. The printer can print up to 132 columns at a speed of 70 lines per minute (180 characters per second). Up to 4 copies plus the original can be produced. The 755-21 utilizes a 7 x 9 dot matrix print head.

753-11 NON-IMPACT PRINTER: A desk-top thermal character printer which can be optionally used with the 722. The printer can print up to 80 columns at a speed of 30 characters per second, and uses 8.5-inch wide, heat sensitive continuous roll paper. The 753-11 utilizes a 5 x 7 dot matrix print head.

## PRICING

The Control Data 722 is available for purchase, or on a one- or three-year lease. Customers may perform their own installation; otherwise an installation charge of $125 per terminal applies.

|  | Monthly Charge* | | | |
|---|---|---|---|---|
|  | 1-Year Lease | 2-Year Lease | Purchase | Monthly Maint. |
| 722-10/-20 Display Terminal | $ 55 | $ 50 | $1,375 | 19 |
| 753-11 Printer | 84 | 77 | 2,350 | 27 |
| 755-21 Printer | 144 | 133 | 3,790 | 66 |

*Includes prime-shift maintenance.■

# Control Data 751 Display Terminal



## MANAGEMENT SUMMARY

In August 1976, Control Data introduced a microprocessor-based, stand-alone display terminal that provides Teletype compatibility and can be used in a point-to-point or multipoint arrangement. The CDC 751-10, controlled by an Intel 8080 microprocessor, is loaded with features and can accommodate a CDC single- or dual-drive tape cassette unit as well as a non-impact or impact printer.

The 751-10 is the end-user version of the 92451 OEM terminal.

Teletype compatibility is supported by character transmission, an optional 20 or 60 ma dc current loop interface, an answerback option, and protocol compatibility with the AT&T 85A1 Data Selective Calling Service, which is provided for multipoint operation. The answerback feature is restricted to point-to-point operation. The multipoint option supports up to 95 terminals on a common line.

Besides Teletype compatibility, the 751-10 provides virtually all the features that the industry offers short of user programmability. The salient features include:

- 10 switch-selectable data rates from 110 to 9600 bps.
- Character, line, or block transmission.
- Format protection for data entry applications.
- Cursor addressability and readability.
- Full cursor control.
- Full edit capability.
- Scrolling.
- Tabulation between tab settings or unprotected fields.
- Display of control codes via representative special symbols. $\triangleright$

A stand-alone teletype-compatible keyboard/display terminal loaded with features for point-to-point or multipoint operation.

Standard features include microprocessor control, character or block transmission, switch-selectable data rates from 110 to 9600 bps, protected format operation, full editing, generation and display of the full ASCII code, and a numeric keypad. Optional features include multipoint operation, a tape cassette unit, and an impact or non-impact printer.

The basic stand-alone terminal sells for $3,150 and leases for $93 per month under a three-year lease. Quantity discounts are available.

## CHARACTERISTICS

VENDOR: Control Data Corporation, P.O. Box 0, Minneapolis, Minnesota 55440. Telephone (612) 853-8100.

DATE OF ANNOUNCEMENT: August 1976.

DATE OF FIRST DELIVERY: September 1976.

NUMBER DELIVERED TO DATE: Over 250.

SERVICED BY: Control Data Corporation.

### CONFIGURATION

The basic 751-10 Display Terminal is a microprocessor-based stand-alone unit with detachable keyboard that can be located up to two feet from the display unit. The basic terminal contains an Intel 8080 microprocessor and can accommodate one printer and one cassette tape unit. I/O options include the 753-10 Nonimpact Printer, the 755-10 Impact Printer, the 754-10 Single Drive Cassette Storage Unit, and the 754-20 Dual Drive Cassette Storage Unit. All I/O devices are desk-top units.

### TRANSMISSION SPECIFICATIONS

Transmission is performed in the half- or full-duplex modes, character-by-character, line, or page. The standard communications interface is asynchronous and is designed for point-to-point transmission. A multipoint transmission option is available. The data transmission rate is switch-selectable at 110, 150, 200, 300, 600, 1200, 1800, 2400, 4800, or 9600 bits/second. The 10- or 11-unit, 8-level ASCII code is used. At 110 bps, the unit code structure is 11 bits, including one start and two stop bits. At all other data rates, the unit code structure is 10 bits, including one start and one stop bit. Parity is switch-selectable; odd or even parity, mark, or space can be selected. An RS-232C/CCTT V.24 interface is standard. A 20 or 60 ma dc current loop interface is optional. The terminal can also be equipped with an answerback option, which is mutually exclusive with the multipoint transmission option.

### DEVICE CONTROL

The CDC 751 is an interactive stand-alone terminal controlled by a microprocessor under the direction of ROM- ▶

# Control Data 751 Display Terminal

▷ ● Display and keyboard operation of upper case only or upper and lower case ASCII characters via switch selection.

● Keyboard generation of full complement of ASCII control codes.

● 1920-character screen.

● Dual intensity display.

● RS-232C/CCITT V-24 or 20/60 ma dc interface.

● Numeric pad.

● Self-test diagnostics.□

► resident firmware. Switch-selectable operating modes include character, line, or block transmissions; on-line or local operation; and formatted operation. The Character mode transmits each character as it is keyed. The Line mode transmits a line of data up to 80 characters in response to the Send function. The Block mode transmits a partial or full screen of data in response to the Send function. Off-line functions that utilize the display screen and I/O devices can be performed in the Local mode. The Format mode is selected to display a fixed format with protected and unprotected fields.

Standard features include a switch-selectable 64 or 96 symbol character set, scroll enable/disable, cursor readability and addressability, audible alarm, tabulation, editing, automatic justification, space or null code selection, display or non-display of control codes, self-test and delimiter-code selection.

Individual cursor controls position the cursor up, down, left, right, or home.

Edit functions include character or line insert or delete with line-to-line or bottom-to-top wraparound.

The audible alarm sounds when the cursor moves to the 73rd character position on a line or enters the 24th (bottom) line.

Local or on-line printing modes are selectable. A single page or all displayed data can be printed.

Tape control functions include tape search, tape read or write, erase, and back skip. The search function can be performed backward or forward. Only one tape function can be performed at a time.

The Answerback option transmits a predetermined identification message of up to 21 characters in response to a received WRU code or a keyed "Here Is."

Self-test mode provides six discrete off-line tests that verify terminal operation.

## SOFTWARE SUPPORT

The CDC 751-10 Display Terminal will operate on all systems that currently support the CDC 713-10 under the following CDC software systems: SCOPE 3.4, KRONOS 2.1, and NOS 1.0. In addition, the 751-10 is supported by 2550 software (CCP 1.0) interfacing to Intercom 4.5 under SCOPE 3.0 and NOS/BE 1.0. CDC software support may not include support for all features of the 751-10 Terminal.

## COMPONENTS

CRT DISPLAY UNIT: A 12-inch (diagonal measurement) CRT with a display arrangement of 24 lines of 80 characters each, providing a maximum display capacity of 1920 charaters. Data is displayed in white; each character is formed via a 7-by-9 dot matrix. The cursor is displayed as a blinking underscore. The standard character set consists of 128 displayable ASCII characters that include upper and lower case alphabetics, numerics, and special symbols; the

33 ASCII control codes are represented by unique symbols. Display enhancements include half- or full-intensity and blinking.

KEYBOARD: A 63-key, Teletype-compatible, detachable keyboard. An 8-key cluster of function keys followed by an 11-key numeric pad (includes decimal point) is located to the right of the main key group; a row of 13 function keys are located over the main keygroup. The main keygroup includes cursor control keys and has the ASCII control code engraved on each keytop. Key functions within the main keygroup include Rub Out, Escape, Carriage-Return, Line-Feed, Repeat, five cursor-control functions, Shift, Control Shift, and Shift Lock. The function key cluster includes Tab Set, Tab, Insert, Delete, FS, GS, RS, and US. The row of 13 function keys includes Clear, Clear Line, Break, Here Is, Page Print, Print On Line, Print Local, Tape Search, Tape Back Skip, Tape Read, STX, ETX, and Send. The keyboard can generate any of the 128 ASCII characters and control codes.

CASSETTE TAPE DRIVES: Available as a single-drive unit (Model 754-10) or as a dual-drive unit (Model 754-20). Each records data on a "Philips type" cassette using the phase-encoding technique. The recording density is 780 bits/inch. Two tracks are recorded per cassette. The cassette storage capacity is 288,000 characters (144,000 char/track). Read, write, search, and erase functions are performed at a tape speed of 7.5 inches/second. Rewind speed is 48 inches/second.

NON-IMPACT PRINTER: The 753-10 Printer employs the electrothermal printing technique and is equipped with a single print head that forms each character within a 5-by-7 dot matrix. The printer is rated at 30 char/second and provides 80 print positions. The character set contains 94 printable symbols including upper and lower case alphabetics, numerics, and special symbols. Horizontal and vertical spacing are 10 char/inch and 6 lines/inch, respectively. The printer accommodates a 100-foot roll of thermal paper 8.75 inches wide and 2.5 inches in diameter. Operator controls are provided for power, paper advance, carriage-return, and single or double line spacing.

IMPACT PRINTER: The 755-10 Printer is a matrix printer that forms each character within a 7-by-7 dot matrix. The printer provides 132 print positions and is rated at 173 char/second (60 Hz version) or 180 char/second (50 Hz version). The character set contains 94 printable symbols including upper and lower case alphabetics, numerics, and special symbols. Horizontal and vertical spacing are 10 char./inch and 6 lines/inch, respectively. The printer accommodates pin-fed, continuous 5-part forms from 4 to 16.75 inches wide and 3.5 to 18 inches long via adjustable tractor feed.

The printer contains a 1000-character print buffer and a 132-character line buffer, and accepts a continuous stream of data at speeds of up to 1200 bps. Vertical format control is implemented via a three-channel tape loop. Operator controls include power, start/stop, test print, and form-feed. An adjustable platen accommodates different form thicknesses.

## PRICING

The Control Data 751 Display Terminal is available for purchase or through a variety of lease plans. The basic Control Data lease is for a period of one year and permits unlimited usage. Through Commercial Credit Company, a Control Data subsidiary, various long-term lease plans up to seven years in length are available. The lease prices below are for the standard one-year Control Data lease and the basic three-year Commercial Credit lease. The Commercial Credit lease is cancellable after 24 months (upon 90 days' notice) and includes unlimited usage and liberal add-on and substitution provisions. Various discounts are available for extending the non-cancellable period and waiving the add-on and substitution privileges. ►

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## Monthly Charge*

| | | 1-Year Lease | 3-Year Lease | Purchase | Monthly Maint. |
|---|---|---|---|---|---|
| 751-10 | Display Terminal | $125 | $118 | $3,150 | $25 |
| 751-101 | Multidrop Option** | 28 | 26 | 490 | 3 |
| 751-103 | Current Loop Option (20/60 ma dc) | 12 | 11 | 125 | 3 |
| 751-104 | Answerback Option** | 16 | 15 | 390 | 3 |
| 753-10 | Nonimpact Printer | 105 | 99 | 2,540 | 25 |
| 754-10 | Single Cassette Drive | 112 | 107 | 2,200 | 37 |
| 754-20 | Dual Cassette Drive | 122 | 116 | 2,520 | 37 |
| 755-10 | Impact Printer | 192 | 183 | 4,370 | 57 |

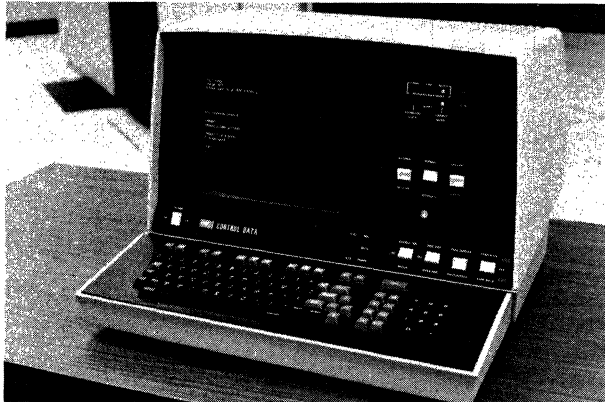\* Includes prime-shift maintenance.
\*\*The Multidrop and Answerback options are mutually exclusive.

## QUANTITY PURCHASE DISCOUNTS

### Purchase Prices

| | | 1-4 Units | 5-9 Units | 10-19 Units | 20-49 Units | 50 Units & Over |
|---|---|---|---|---|---|---|
| 751-10 | Display Terminal | $3,150 | $2,961 | $2,898 | $2,835 | $2,678 |
| 751-101 | Multidrop Option* | 490 | 461 | 451 | 441 | 417 |
| 751-103 | Current Loop Option (20/60 ma dc) | 125 | 118 | 115 | 113 | 106 |
| 751-104 | Answerback Option* | 390 | 367 | 359 | 351 | 332 |
| 753-10 | Nonimpact Printer | 2,540 | 2,388 | 2,337 | 2,286 | 2,159 |
| 754-10 | Single Cassette Drive | 2,200 | 2,068 | 2,024 | 1,980 | 1,870 |
| 754-20 | Dual Cassette Drive | 2,520 | 2,369 | 2,318 | 2,268 | 2,142 |
| 755-10 | Impact Printer | 4,370 | 4,108 | 4,020 | 3,933 | 3,715 |

*Mutually exclusive features.■

# Control Data 751, 752, and 756
# Display Terminals



Control Data's Model 751 represents the top of its interactive terminal line. The 751 is controlled by an Intel 8080 microprocessor, is loaded with features, and can be used in a point-to-point or multipoint operation.

A series of stand-alone Teletype-compatible display terminals that provides a choice of low/medium/high terminal capabilities.

The low-end of the family is the Model 752, a "dumb" conversational terminal. In the middle of the range is the Model 756, a full editing terminal with 12 program function keys. The high end model is the 751 with sophisticated capabilities including controlled printer interfacing, readable cursor, cassette tape drive support, and optional multipoint transmission.

Each terminal is available for purchase or on a one- or three-year lease. Basic purchase prices for the 752, 756, and 751 are $1,650, $2,197, and $3,150 respectively. Three-year lease prices range from $69 to $118 per month, including maintenance.

## MANAGEMENT SUMMARY

Control Data's Model 751, 752, and 756 display terminals comprise a family covering a broad spectrum of capabilities. Each unit provides Teletype-compatibility and features a detachable keyboard, 12-inch CRT display, and a serial printer interface.

The Model 751, introduced in August 1976, is the oldest in the series and the most sophisticated in terms of capabilities. It is controlled by an Intel 8080 microprocessor plus plug-in logic modules, and provides virtually all the features that the industry currently offers short of user programmability. It is the only unit of the three that can support a cassette tape unit and provides controlled (rather than slave) printer interfacing. In addition, it supports an answerback option and protocol compatibility with the AT&T 85A1 Data Selective Calling Service, which is provided for multipoint operation. The answerback feature is restricted to point-to-point operation. The multipoint option supports up to 95 terminals on a common line.

The Model 752 was announced in February 1977, and represents the low end of the series. It features character-by-character transmission, full cursor controls and cursor addressibility, but very limited editing functions. The 752 is controlled by hardwired logic using a single logic board.

Released in June 1978, the Model 756 fits between the 751 and 752 in the spectrum of capabilities. Like the Model 751, it is microprocessor-controlled, but logic is contained on a single circuit board. The 756 provides a full range of editing functions, format protection, tabulation, and other sophisticated functions of the 751, but lacks such features as the answerback, multipoint transmission, cassette tape unit support, and readable ▷

## CHARACTERISTICS

VENDOR: Control Data Corporation, P.O. Box 0, Minneapolis, Minnesota 55440. Telephone (612) 853-8100.

DATE OF ANNOUNCEMENT: Model 751—September 1976; Model 752—February 1977; Model 756—June 1978.

DATE OF FIRST DELIVERY: September 1976; Model 752—March 1977; Model 756—June 1978.

NUMBER DELIVERED TO DATE: Approximately 9000 (all models).

SERVICED BY: Control Data Corporation.

CONFIGURATION

The basic 751, 752, and 756 Display Terminals are stand-alone units with detachable keyboards that can be located up to two feet from the display unit. Each terminal can accommodate one printer. Model 751 can also support one cassette tape unit. I/O options include the 753-10 or -11 Non-impact Printer, the 755-20 or -21 Impact Printer, the 754-10 Single Drive Cassette Storage Unit, and the 754-20 Dual Drive Cassette Storage Unit. All I/O devices are desk-top units and can be located up to 10.5 feet from the display terminal.

The models can be differentiated as follows:

Model 752—A basic conversational terminal. The 752 is controlled by hardwired single-board logic.

Model 756—a "smart" terminal with full editing features and 12 program function keys (24 stored functions). The 756 is microprocessor-based (Intel 8080) and uses a single logic board.

Model 751—a "smart" terminal with full editing features, addressable/readable cursor, controlled printer interface, cassette tape unit support, and answerback and multipoint ▶

# Control Data 751, 752, and 756
# Display Terminals

▷ cursor. The 752 does have one feature not found on the other two units: 12 dedicated program function keys that permit the user to store up to 24 function sequences.

For CDC mainframe users, Model 751, 752, and 756 are supported under NOS and NOS/BE operating systems.

The 751, 752, and 756 are the end-user versions of Control Data Model 92451, 92452, and 92456 OEM terminals.□

▶ transmission options. The 751 is microprocessor-based (Intel 8080) and uses multiple plug-in modular logic boards.

All units are equipped for 60 Hz 120V operation; Models 752 and 756 also have 50/60 Hz 220V/240V versions.

## TRANSMISSION SPECIFICATIONS

Transmission is performed in the half- or full-duplex modes character-by-character. Model 756 can also transmit data a block at a time. Model 751 can transmit by character, line, or block. The standard communications interface is asynchronous and is designed for point-to-point transmission. A multipoint transmission option is available for the 751. The data transmission rate is selectable at 110, 150, 200, 300, 600, 1200, 1800, 2400, 4800, or 9600 bits/second via a 10-position switch. The 10- or 11-unit, 8-level ASCII code is used. At 110 bps, the unit code structure is 11 bits, including one start and two stop bits. At all other data rates, the unit code structure is 10 bits, including one start and one stop bit. Parity is switch-selectable; odd or even parity or a mark or space condition can be selected. An RS-232C/CCTT V.24 interface is standard. A 20 or 60 mA dc current loop interface is optional. The 751 can be equipped with an answerback option, which is mutually exclusive of its multipoint transmission option.

## DEVICE CONTROL

*Model 751*— The CDC 751 is an interactive stand-alone terminal controlled by a microprocessor under the direction of ROM-resident firmware. Switch-selectable operating modes include character, line, or block transmissions; on-line or local operation; and formatted operation. The Character mode transmits each character as it is keyed. The Line mode transmits a line of data up to 80 characters in response to the Send function. The Block mode transmits a partial or full screen of data in response to the Send function. Off-line functions that utilize the display screen and I/O devices can be performed in the Local mode. The Format mode is selected to display a fixed format with protected and unprotected fields.

Standard features include a switch-selectable 64 or 96 symbol character set, scroll enable/disable, cursor read-ability and addressability, audible alarm, tabulation, editing, erase functions, highlighting, automatic justification, space or null code selection, display or non-display of control codes, self-test and delimiter-code selection.

Individual cursor controls position the cursor up, down, left, right, or home.

Edit functions include character or line insert or delete with line-to-line or bottom-to-top wraparound. Erase functions include character, line, and screen erasure. Fields can be highlighted via blinking or shown in reduced display intensity.

The audible alarm sounds when the cursor moves to the 73rd character position on a line or enters the 24th (bottom) line.

The printer interface permits the user to control data to be printed. Local or on-line printing modes are selectable. A single page or all displayed data can be printed. Data can also be printed directly from the cassette tape unit to the printer without affecting communications between the host computer and keyboard/display.

Tape control functions include tape search, tape read or write, erase, and back skip. The search function can be performed backward or forward. Only one tape function can be performed at a time.

The Answerback option transmits a predetermined identification message of up to 21 characters in response to a received WRU code or a keyed "Here Is."

Self-test mode provides six discrete off-line tests that verify terminal operation.

*Model 752*— The CDC 752 is an interactive stand-alone terminal controlled by a single hardwired logic board. On-Line and local modes are switch-selectable.

Standard features include a switch-selectable 64- or 96-symbol character set, scroll enable/disable, cursor address-ability, erase functions, highlighting, audible alarm, display or non-display of control codes, self-test and delimiter-code selection.

Individual cursor controls position the cursor up, left, right or home; the cursor can also be controlled via the carriage-return and line-feed functions.

Erase functions include character, line, and screen erase. Fields can be highlighted via blinking or shown in reduced display intensity.

The audible alarm sounds when the cursor moves to the 73rd character position on a line or enters the 24th (bottom) line.

Self-test mode provides six discrete off-line tests that verify terminal operation.

Data transfer to an attached printer is automatic (but can be disabled); all data sent from or received by the terminal is printed.

*Model 756*— The CDC 756 is an interactive stand-alone terminal controlled by a microprocessor under the direction of ROM-resident firmware. Switch-selectable operating models include character or block transmissions, on-line or local operation, and formatted operation. The Character mode transmits each character as it is keyed. The Block mode transmits a partial or full screen of data in response to the Send function. The Format mode is selected to display a fixed format with protected and unprotected fields.

Standard features include a switch-selectable 64 or 96 symbol character set, scroll enable/disable, cursor read-ability, audible alarm, tabulation, editing, erase functions, highlighting, program function keys, split screen, space or null code selection, display or non-display of control codes, self-test and delimiter-code selection.

Individual cursor controls position the cursor up, down, left, right, or home.

Edit functions include character or line insert or delete. Erase functions include character, line, and screen erasure. Fields can be highlighted via blinking or shown in reduced display intensity.

Twelve program function keys are standard; using the shift key, 24 function sequences can be stored. ▶

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## Display Terminals

▶ The audible alarm sounds when the cursor moves to the 73rd character position on a line or enters the 24th (bottom) line.

Self-test mode provides six discrete off-line tests that verify terminal operation.

Data transfer to an attached printer is automatic (but can be disabled); all data sent from or received by the terminal is printed.

## COMPONENTS

CRT DISPLAY UNIT: A 12-inch (diagonal measurement) CRT with a display arrangement of 24 lines of 80 characters each, providing a maximum display capacity of 1920 characters. Data is displayed in white; each character is formed via a 7-by-9 dot matrix. The cursor is displayed as a blinking underscore. The standard character set consists of 128 displayable ASCII characters that include upper and lower case alphabetics, numerics, and special symbols; the 33 ASCII control codes are represented by unique symbols. Display enhancements include half- or full-intensity and blinking.

751 KEYBOARD: A 95-key, Teletype-compatible, typewriter-style detachable keyboard. An 8-key cluster of function keys and an 11-key numeric pad (includes decimal point) is located to the right of the main keygroup; a row of 13 function keys is located over the main keygroup. The main keygroup includes cursor control keys and has the ASCII control code engraved on each keytop. Key functions within the main keygroup include Rub Out, Escape, Carriage-Return, Line-Feed, Repeat, five cursor-control functions, Shift, Control Shift, and Shift Lock. The function key cluster includes Tab Set, Tab, Insert, Delete, FS, GS, RS, and US. The row of 13 function keys includes Clear, Clear Line, Break, Here Is, Page Print, Print On Line, Print Local, Tape Search, Tape Back Skip, Tape Read, STX, ETX, and Send. The keyboard can generate any of the 128 ASCII characters and control codes.

752 KEYBOARD: An 83-key, Teletype-compatible, typewriter-style detachable keyboard. A 14-key numeric pad (includes decimal point and plus and minus enter keys) is located to the right of the main keygroup; eight function keys are located above the main keygroup. The main keygroup includes cursor control keys and has the ASCII control code engraved on each keytop. Key functions within the main keygroup include Carriage Return, Repeat, five cursor-control functions, Shift, Control Shift, and Shift Lock. The additional eight function keys include Clear EOP, Clear EOL, CO, Local, ETX, Break, ESCape, and Rub Out. The keyboard can generate any of the 128 ASCII characters and control codes. An 80-key International-layout keyboard is also available.

756 KEYBOARD: A 104-key, Teletype-compatible, typewriter-style, detachable keyboard. Keyboard layout is nearly identical to that of the 752 keyboard, except for the addition of 10 keys for tabulation, editing, block mode, and other 756 functions, located within the main keygroup, and 12 program function keys placed in a row above the main keygroup. A 99-key International-layout keyboard is also available.

CASSETTE TAPE DRIVES: Available as a single-drive unit (Model 754-10) or as a dual-drive unit (Model 754-20). Each records data on a "Philips type" cassette using the phase-encoding technique. The recording density is 780 bits/inch. Two tracks are recorded per cassette. The cassette storage capacity is 288,000 characters (144,000 char/track). Read, write, search, and erase functions are performed at a tape speed of 7.5 inches/second. Rewind speed is 48 inches/second.

NON-IMPACT PRINTER: The 753 Printer employs the electrothermal printing technique and is equipped with a single print head that forms each character within a 5-by-7 dot matrix. The printer is rated at 30 char/second and provides 80 print positions. The character set contains 94 printable symbols including upper and lower case alphabetics, numerics, and special symbols. Horizontal and vertical spacing are 10 char/inch and 6 lines/inch, respectively. The printer accommodates a 100-foot roll of 8.5-inch wide thermal paper. Operator controls are provided for power, paper advance, carriage-return, and single or double line spacing.

Model 753-10 provides a controlled interface used with Model 751. Model 753-11 provides a slave interface used with Models 752 and 756.

IMPACT PRINTER: The 755 Printer is a matrix printer that forms each character within a 7-by-9 dot matrix. The printer provides 132 print positions and prints bidirectionally at a rate of 180 characters per second. The average throughput is rated at 70 lines per minute with a 132-character line, or 200 lines per minute with a 33-character line. The character set contains 94 printable symbols including upper and lower case alphabetics, numerics, and special symbols. Horizontal and vertical spacing are operator-selectable at 10 or 16.5 char./inch and 6 or 8 lines/inch, respectively. The printer accommodates pin-fed, continuous 5-part forms from 4 to 16.75 inches wide and 3.5 to 18 inches long via adjustable tractor feed.

The printer contains a 1000-character print buffer and a 132-character line buffer, and accepts a continuous stream of data at speeds of up to 1200 bps. Vertical format control is implemented via a three-channel tape loop. Operator controls include power, start/stop, test print, and form-feed. An adjustable platen accommodates different form thicknesses.

Model 755-20 provides a controlled interface used with Model 751. Model 755-21 provides a slave interface used with Models 752 and 756.

## PRICING

The Control Data 751, 752, and 756 Display Terminals are available for purchase or through a variety of lease plans. The basic Control Data lease is for a period of one year and permits unlimited usage. Through Commercial Credit Company, a Control Data subsidiary, various long-term lease plans up to seven years in length are available. The lease prices below are for the standard one-year Control Data lease and the basic three-year Commercial Credit lease. The Commercial Credit lease is cancellable after 24 months (upon 90 days' notice) and includes unlimited usage and liberal add-on and substitution provisions. Various discounts are available for extending the non-cancellable period and waiving the add-on and substitution privileges.

Control Data discontinued offering quantity discounts to end-users of these terminals as of February 1979. ▶

# Control Data 751, 752, and 756
# Display Terminals

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|  |  | Monthly Charge* | | | |
|---|---|---|---|---|---|
|  |  | 1-Year Lease | 3-Year Lease | Purchase | Monthly Maint. |
| 751-10 | Display Terminal | $125 | $118 | $3,150 | $25 |
| 751-101 | Multidrop Option** | 28 | 26 | 490 | 3 |
| 751-103 | Current Loop Option (20/60 mA dc) | 12 | 11 | 125 | 3 |
| 751-104 | Answerback Option** | 16 | 15 | 390 | 3 |
| 752-30 | Display Terminal with RS-232C/CCITT V.24 interface | 72 | 69 | 1,650 | 17 |
| 752-31 | Display Terminal with 20 mA dc current loop interface | 88 | 83 | 1,750 | 25 |
| 752-40 | Display Terminal (50 Hz, 220V/240V version of 752-30) | 77 | 74 | 1,710 | 17 |
| 752-41 | Display Terminal (50 Hz, 220V/240V version of 752-31) | 93 | 88 | 1,810 | 25 |
| 756-10 | Display Terminal with RS-232C/CCITT V.24 interface | 90 | 85 | 2,197 | 20 |
| 756-11 | Display Terminal with 20 mA dc current interface | 106 | 101 | 2,244 | 28 |
| 756-20 | Display Terminal (50 Hz, 220V/240V version of 756-10) | 93 | 88 | 2,287 | 20 |
| 756-21 | Display Terminal (50 Hz, 220V/240V version of 756-11) | 109 | 103 | 2,329 | 28 |
| 753-10 | Non-impact Printer (with controller) | 105 | 99 | 2,540 | 25 |
| 753-11 | Non-impact Printer (no controller required) | 101 | 95 | 2,440 | 25 |
| 754-10 | Single Cassette Drive | 112 | 107 | 2,200 | 37 |
| 754-20 | Dual Cassette Drive | 122 | 116 | 2,520 | 37 |
| 755-20 | Impact Printer (with controller) | 192 | 183 | 3,990 | 57 |
| 755-21 | Impact Printer (no controller required) | 188 | 178 | 3,790 | 57 |

\* Includes prime-shift maintenance.
\*\*The Multidrop and Answerback options are mutually exclusive.■

# Control Data 752 Display Terminal

A low-cost, stand-alone Teletype-compatible keyboard/display terminal for point-to-point operation.

Standard features include a 1920-character screen, full ASCII keyboard with numeric pad, upper and lower case alphabetics, diagnostic self-testing, and switch-selectable data rates from 110 to 9600 bps. Printed output is optional.

The basic terminal sells for $1,650 and leases for $69 per month including maintenance under a three-year lease. Quantity discounts are available for purchased units.

## MANAGEMENT SUMMARY

In February 1977, Control Data introduced a low-cost, reduced-capability version of its 751 Display Terminal which was unveiled in August 1976. Like the 751, the 752 is a Teletype-compatible terminal and is intended for a time-sharing environment in a point-to-point arrangement. The 752 exhibits all of the standard features of the 751 except tabulation, editing, format protection, line or block transmission, and the answerback feature. The 752 is available with an external impact or non-impact printer for hard copy of displayed data; a cassette tape feature is not offered. The 752 is available with an RS-232C/ CCITT V.24 interface or a 20 ma dc current loop interface. The 752 is the end-user version of the 92452 OEM terminal.

Salient features of the 752 include:

● 10 switch-selectable data rates from 110 to 9600 bps.

● Character-by-character transmission.

● Cursor addressing and sensing.

● Scrolling.

● 1920-character screen.

● Dual intensity display.

● Blinking.

● Numeric pad.

● 64, 96, or 128 displayable symbols.

● Self-test diagnostics.

● Display of control codes via representative special symbols.□

## CHARACTERISTICS

**VENDOR: Control Data Corporation, P.O. Box 0, Minneapolis, Minnesota 55440. Telephone (612) 853-8100.**

**DATE OF ANNOUNCEMENT: February 1977.**

**DATE OF FIRST DELIVERY: March 1977.**

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

**SERVICED BY: Control Data Corporation.**

### CONFIGURATION

The basic 752-10 Display Terminal is a microprocessor-based stand-alone unit with detachable keyboard that can be located up to two feet from the display unit. The basic terminal contains an Intel 8080 microprocessor and can accommodate one printer—the 753-11 Nonimpact Printer or the 755-11 Impact Printer. The optional printer can be located up to 10.5 feet from the display terminal. With the 20 milliamp dc interface the model number becomes 752-11. Both interfaces are available in models intended for 50 Hz, 220/240 volt operation; the model numbers are 752-20 and 752-21.

### TRANSMISSION SPECIFICATIONS

Transmission is performed in the half- or full-duplex mode on a character-by-character basis as each key is depressed. The standard communications interface is asynchronous and is designed for point-to-point transmission. The data transmission rate is switch-selectable at 110, 150, 200, 300, 600, 1200, 1800, 2400, 4800, or 9600 bits/second via a 10-position switch.

The 10- or 11-unit, 8-level ASCII code is used. At 110 bps, the unit code structure is 11 bits, including one start and two stop bits. At all other data rates, the unit code structure is 10 bits, including one start and one stop bit. Parity is switch-selectable; odd or even parity or a mark or space condition can be selected. An RS-232C/CCITTV.24 interface is standard. A 20 ma dc current loop interface is optional. ➤

# Control Data 752 Display Terminal

## ► DEVICE CONTROL

The CDC 752 is an interactive stand-alone terminal controlled by a microprocessor under the direction of ROM-resident firmware. On-Line and local modes are switch-selectable.

Standard features include a switch-selectable 64- or 96-symbol character set, scroll enable/disable, cursor readability and addressability, audible alarm, display or non-display of control codes, self-test and delimiter-code selection.

Individual cursor controls position the cursor up, left, right or home; the cursor can also be controlled via the carriage-return and line-feed functions.

The audible alarm sounds when the cursor moves to the 73rd character position on a line or enters the 24th (bottom) line.

Self-test mode provides six discrete off-line tests that verify terminal operation.

## SOFTWARE SUPPORT

The CDC 752-10 Display Terminal will operate on all systems that currently support the CDC 713-10 under the following CDC software systems: SCOPE: 3.4, KRONOS 2.1, and NOS 1.0. In addition, the 751-10 is supported by 2550 software (CCP 1.0) interfacing to Intercom 4.5 under SCOPE 3.0 and NOS/BE 1.0. CDC software support may not include support for all features of the 752-10 Terminal.

## COMPONENTS

CRT DISPLAY UNIT: A 12-inch (diagonal measurement) CRT with a display arrangement of 24 lines of 80 characters each, providing a maximum display capacity of 1920 characters. Data is displayed in white; each character is formed via a 7-by-9 dot matrix. The cursor is displayed as a blinking underscore. The standard character set consists of 64 or 96 (switch-selectable) displayable ASCII characters that include upper and lower case alphabetics, numerics, and special symbols; the 33 ASCII control codes are represented by unique symbols and can be displayed under test conditions. Display enhancements include half or full intensity and blinking.

KEYBOARD: A 63-key, Teletype-compatible, detachable keyboard. A 13-key numeric pad (includes decimal point and plus and minus enter keys) is located to the right of the main keygroup. The main keygroup includes cursor control keys and has the ASCII control code engraved on each keytop.

Key functions within the main keygroup include Rub Out, Escape, Carriage Return, Line-Feed, Repeat, four cursor-control functions, Shift, Control Shift, and Shift Lock. The keyboard can generate any of the 128 ASCII characters and control codes.

NON-IMPACT PRINTER: The 753-11 Printer employs the electrothermal printing technique and is equipped with a single print head that forms each character within a 5-by-7 dot matrix. The printer is rated at 30 char/second and provides 80 print positions. The character set contains 94 printable symbols including upper and lower case alphabetics, numerics, and special symbols. Horizontal and vertical spacing are 10 char/inch and 6 lines/inch, respectively. The printer accommodates a 100-foot roll of thermal paper 8.75 inches wide and 2.5 inches in diameter. Operator controls are provided for power, paper advance, carriage return, and single or double line spacing.

IMPACT PRINTER: The 755-11 Printer is a matrix printer that forms each character within a 7-by-7 dot matrix.

The printer provides 132 print positions and is rated at 173 char/second (60 Hz version) or 180 char/second (50 Hz version). The character set contains 94 printable symbols including upper and lower case alphabetics, numerics, and special symbols. Horizontal and vertical spacing are 10 char./inch and 6 lines/inch, respectively. The printer accommodates pin-fed, continuous 5-part forms from 4 to 16.75 inches wide and 3.5 to 18 inches long via adjustable tractor feed.

The printer contains a 1000-character print buffer and a 132-character line buffer, and accepts a continuous stream of data at speeds of up to 1200 bps. Vertical format control is implemented via a three-channel tape loop. Operator controls include power, start/stop, test print, and form-feed. An adjustable platen accommodates different form thicknesses.

## PRICING

The Control Data 752 Display Terminal is available for purchase or through a variety of lease plans. The basic Control Data lease is for a period of one year and permits unlimited usage. Through Commercial Credit Company, a Control Data subsidiary, various long-term lease plans of up to seven years in length are available. The lease prices below are for the standard one-year Control Data lease and the basic three-year Commercial Credit lease. The Commercial Credit lease is cancellable after 24 months (upon 90 days notice) and includes unlimited usage and liberal add-on and substitution provisions. Various discounts are available for extending the non-cancellable period and waiving the add-on substitution privileges. ►

# Control Data 752 Display Terminal

|  |  | Monthly charge* | | | |
| --- | --- | --- | --- | --- | --- |
|  |  | 1-Year Lease | 3-Year Lease | Purchase | Monthly Maint. |
| 752-10 | Display Terminal with RS-232C/CCITT V.24 interface | 72 | 69 | 1,650 | 17 |
| 752-11 | Display Terminal with 20 ma dc current interface | 88 | 83 | 1,750 | 25 |
| 752-20 | Display Terminal (50 Hz, 220V/240V version of 752-10) | 77 | 74 | 1,735 | 17 |
| 752-21 | Display Terminal (50 Hz, 220V/240V version of 752-11) | 93 | 88 | 1,835 | 25 |
| 753-11 | Nonimpact Printer | 101 | 95 | 2,440 | 25 |
| 755-11 | Impact Printer | 188 | 178 | 4,270 | 57 |

*Includes prime-shift maintenance.

## QUANTITY PURCHASE DISCOUNTS

|  |  | Purchase Prices | | | | |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | 1-4 Units | 5-9 Units | 11-19 Units | 20-49 Units | 50-99 Units |
| 752-10 | Display Terminal | 1,650 | 1,551 | 1,518 | 1,485 | 1,403 |
| 752-11 | Display Terminal | 1,750 | 1,645 | 1,610 | 1,575 | 1,488 |
| 752-20 | Display Terminal | 1,735 | 1,631 | 1,596 | 1,562 | 1,475 |
| 752-21 | Display Terminal | 1,835 | 1,725 | 1,688 | 1,651 | 1,560 |
| 753-11 | Nonimpact Printer | 2,440 | 2,294 | 2,245 | 2,196 | 2,074 |
| 755-11 | Impact Printer | 4,270 | 4,014 | 3,928 | 3,843 | 3,630 ∎ |