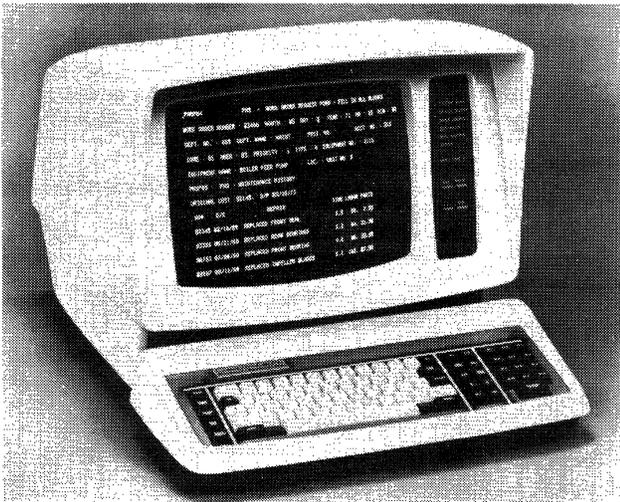


Courier 270 Information Display System



MANAGEMENT SUMMARY

The Courier 270, an IBM 3270-compatible terminal, is available in local or remote cluster configurations and in a remote stand-alone configuration, as is its IBM counterpart. The cluster configuration can contain as many as 32 devices, including any combination of CRT keyboard/display units and printers. The stand-alone version can accommodate a single printer.

Courier, an early and leading manufacturer of replacement CRT terminals for the IBM 2260/2848 and 2265/2245 Display Stations, entered the IBM 3270 replacement market in November 1973 with the introduction of its 270 Information Display System. The company states that about 10,000 of the 270 display units are now installed throughout the U.S., Canada, and Western Europe.

The Courier 270 provides complete compatibility with the IBM 3270 with respect to line discipline, commands and command-code structure, and addressing sequence. The Courier terminals also provide all the features and functions that are currently available with the IBM 3270, as well as some worthwhile enhancements. Compatibility with IBM's new SDLC line protocol is currently under development.

The salient features of the 270 system as compared with those of the IBM 3270 system include:

- Display capacity—The cluster and stand-alone configurations offer a choice of three screen sizes: 480, 960, and 1920 characters. IBM provides two screen sizes: 480 and 1920 characters.
- System configuration—The clustered systems are available in both local and remote configurations, and can accommodate any mix of displays and printers in

A stand-alone or multi-station display system for direct replacement of the IBM 3270 in either local or remote applications.

Any mix of up to 32 displays and printers can be accommodated; three screen sizes, 480, 960, and 1920 characters, are available with a standard 96-character set. Printers feature separate buffers for enhanced system performance.

Enhancements include system redundancy and 9600 bps transmission.

A typical stand-alone unit equipped for dial-up communications and with 100 cps printer costs \$307 per month on a 3-year lease, or can be purchased for \$9,450.

CHARACTERISTICS

VENDOR: Courier Terminal Systems, Inc., 2202 East University Drive, Phoenix, Arizona 85034. Telephone (602) 244-1392.

DATE OF ANNOUNCEMENT: November 1973.

DATE OF FIRST DELIVERY: January 1974.

NUMBER DELIVERED TO DATE: About 10,000.

SERVICED BY: Courier.

CONFIGURATION

The 2700 multistation display system is designed for use in a local or remote cluster arrangement that includes a separate controller. Local and remote cluster applications are implemented by separate controllers designated as Local Terminal Controllers (LTC) and Remote Terminal Controllers (RTC). The available controller models and the number of devices accommodated by each are shown in the following table:

System Operation	Control Unit	Total Devices Accommodated*	
		Basic Controller	Expanded Controller
Local	2721 LTC	8	16, 24, or 32
Local	2722 LTC	16	24 or 32
Remote	2710 RTC	4	non-expandable
Remote	2711 RTC	8	16, 24, or 32
Remote	2712 RTC	16	24 or 32

*Including CRT keyboard/display units and printers; a device adapter is required for each increment of eight devices.

Controller Models 2712 (RTC) and 2722 (LTC) are redundant and contain two controllers housed in the same cabinet. Manual switch-over to the redundant unit is provided in case of system failure.

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➤ increments of up to 8 devices to a maximum system size of 32 devices. System redundancy is available for both local and remote cluster arrangements and is implemented via redundant controller logic. The second or redundant controller, an added-cost option, is a backup unit to the first.

IBM's 3270, by contrast, can accommodate any mix of up to 32 devices including CRT display units and printers in increments supporting four devices for both local and remote cluster arrangements.

- Displayed output—The Courier 270 display units feature a standard displayable character set of 64 symbols; 96 symbols (including lower case alphabets) are available as an option. Display resolution is enhanced through the use of a 7-by-10 dot matrix to form each character. By contrast, the IBM 3270 has a standard 64-character set of upper case alphabets (lower case alphabets are available via an RPQ), which are formed by a 7-by-9 dot matrix. Like their IBM counterpart, the 270 systems feature two beam intensity levels and a beam blanking level; individual characters or fields can be displayed at a brighter-than-normal intensity to contrast with data displayed at a normal level of brightness, or the data can be blanked (not displayed) for security purposes.

As an added touch, the Courier terminals provide blink and underscore functions as standard features. When incorporated into the user's application programs, these non-IBM features allow underscoring variable data fields within a fixed format to define the exact number of characters to be entered and blinking fields that require correction. The cursor, an underscore, can be easily located by blinking the character (or non-character) at its current location.

- Key entry—Four keyboard styles are available with the Courier terminals, which essentially duplicate those offered with the IBM 3270. A 10-key numeric pad is available with the typewriter arrangement. The keyboards are designed to produce an audible "click" and a tactile touch in response to a key depression.
- Printed output—Courier currently offers a choice of three serial impact printer models rated at 100 cps (Centronics 306), 88 cps (Centronics 588), or 165 cps (Centronics 101AL). The 100-cps printer has 80 print positions; the others, 132 print positions. In a cluster configuration, each printer has its own 1920-character buffer so that printing does not affect system throughput speed. Printer buffering is not provided for the stand-alone configuration and printing is performed from the display buffer. The printer models can be combined in any mix in a cluster arrangement. Courier also offers interfaces for the following printers: Okidata CP 110, Tally 2000, and GE TermiNet 30. The company plans to offer both the Okidata and Tally printers as part of its standard product line.

➤ The basic terminal controller contains one or two device adapters and can be expanded to accommodate up to four. Each device adapter handles up to eight devices, including any mix of display units and printers. Different printer models and CRT screen capacities can be mixed on the same controller. Each device can be located up to 2000 cable-feet from the controller. Each attached printer requires one 2730 Printer Controller, which contains a 1920-character buffer and accommodates any of the three available printer models.

Each display unit in a local or remote cluster arrangement can support a light pen and a badge reader.

The Local Terminal Controller contains a channel interface for direct connection (via up to 200 cable-feet) to an IBM System/360 computer, Models 25 through 195, or an IBM System/370 computer, Models 115 through 195, via a Selector, Multiplexer, or Block Multiplexer channel. The maximum data transfer rate for transfers from LTC to channel is 483,000 bytes/second; that for transfers from channel to LTC is 535,000 bytes/second.

The Remote Terminal Controller is connected to a modem via a 50-foot cable.

The 2750 display terminal is designed for use in a stand-alone arrangement and contains its own controller. The 2750 can accommodate any one of its standard printer models via a 2735 Printer Controller and printer adapter. The 2735 is an unbuffered controller which shares the 2750's display buffer. The 2750 display terminal can also support a light pen and a badge reader.

Connection to a communications facility is established via a modem, which can be located up to 50 cable-feet from the 2750 display terminal.

TRANSMISSION SPECIFICATIONS

Transmission is half duplex synchronous at 9600, 7200, 4800, 2400, or 1200 bits/second, using 8-level EBCDIC or ASCII (with parity) transmission code. The C270 series terminals employ the IBM Binary Synchronous Communications (BSC) technique and are transmission-compatible with the IBM 3270 Information Display System. (Compatibility with the SDLC line protocol is currently under development.)

The 270 provides an EIA Standard RS-232C interface and connects to a voice-grade communications facility via a modem. The following table shows the relationship between the transmission speed and modem type; although Bell System modems are shown, equivalent modems from independent manufacturers can be used.

Transmission Rate	Bell System Modem
1200 bps	202C/D/E/R
2400 bps	201 B/C
4800	208 A/B
7200 bps	209A
9600 bps	209A

CRT DISPLAY: Via a 14-inch (diagonal measurement) CRT with a viewing area 8 inches high by 11 inches wide. The display screen arrangement is dependent on the model, as shown below.

2700 or 2750 model:	1	2	3
Characters/display:	480	960	1920
Lines/display:	12	12	24
Characters/line:	40	80	80

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➤ By comparison, IBM offers two printers rated at 40 cps and 66 cps and providing 120, 126, or 132 print positions. Each printer attached to the IBM 3270 is buffered and operates essentially as an on-line device; the two printer models can be mixed on the same controller. The stand-alone IBM printer, however, is unbuffered; printing is performed from the CRT terminal buffer.

- Communications—Transmission speeds for the 270 series terminals range from 1200 to 9600 bits per second, compared with 1200 to 4800 bits per second for the IBM 3270. Communications protocol is IBM BSC; compatibility with IBM SDLC protocol is currently not available, but is under development.
- Software support—The 270 system is compatible with and can utilize all existing IBM software for the 3270.

Initial customer deliveries of the local cluster version of the 270 system were made in November 1973. Deliveries of the remote cluster version began in January 1974, followed by the stand-alone version during the second quarter of 1974 and the master station version during the third quarter of 1974. (The master station version, a limited-size remote cluster configuration, is no longer offered by Courier.)

Installation and service are provided by Courier through its nationwide service organization, which currently consists of 100 customer engineers and service locations in 30 major cities throughout the U.S., including New York, Philadelphia, Cincinnati, Cleveland, Atlanta, Chicago, Detroit, Washington, D.C., Phoenix, Dallas, Houston, San Francisco, and Los Angeles.

USER REACTION

In Datapro's 1975 survey of alphanumeric display terminal users, six users reported on their experience with a total of 89 Courier 270 terminals. Datapro also interviewed three large users with a combined total of 750 of the Courier 270 terminals. The ratings of these nine users are summarized below.

	Excellent	Good	Fair	Poor	WA*
Overall performance	4	4	0	0	3.5
Ease of operation	6	3	0	0	3.7
Hardware reliability	4	5	0	0	3.4
Maintenance service	3	4	1	1	3.0
Software and technical support	3	3	1	2	2.8

*Weighted Average on a scale of 4.0 for Excellent.

These well-satisfied users cited cost as the key advantage of the Courier 270 over its IBM counterpart. Other advantages they noted were the non-glare screen, blinking capability, faster printers, and better display image. One user complained that the keyboard touch did not compare favorably with IBM's, but Courier plans to introduce a new "tactile" keyboard with which it will replace the ➤

➤ A character set of 64 or 96 (optional) ASCII characters, including upper and lower (optional) case alphabets, numerics, and special symbols is displayed in green against a dark background. Each character is formed by a standard matrix of 7 by 10 dots.

Beam intensity, via program control, can be switched between normal and bright intensity levels, or the beam can be turned off (blanked).

DEVICE CONTROL

The 270 operates under the control of the program stored at the host computer and provides complete compatibility with the addressing sequence, command code structure, and line discipline employed by the IBM 3270 Information Display System.

The 270 responds to and executes the full repertoire of IBM 3270 commands via a microprocessor with read-only memory. In addition, the 270 features some enhancements that are supported under the existing framework of IBM software and can be user-implemented through slight modification to individual application programs.

Cursor control is functionally the same as in the IBM 3270, with the addition of a Home position. The cursor can be moved up, down, left, or right, step-by-step or repetitively (if the key remains depressed), backspaced one character position, moved to the beginning of the next line, tabbed to the beginning of the next unprotected data field, back-tabbed to the beginning of the previous unprotected data field, or returned to the first unprotected character position on the screen (Home). Like the IBM 3270, the 270 features cursor wraparound.

Program Function and Program Attention keys (designated PF_n and PA_n, respectively), a standard feature of the IBM 3270, are also a standard feature of the 270. Each of these keys generates a unique code recognized by the controlling software as a specific program request or data identifier. The two key functions differ in that the Program Function code accompanies the displayed data as it is transmitted to the computer, while the Program Attention code is transmitted separately.

A light pen is available as an option and functionally corresponds to IBM's Selector Pen, a 3270 option. Any one or several alphanumeric or numeric fields of fixed or variable format can be selected by the pen, which transmits the address of the selected entry to the computer to initiate the programmed function.

Features include all those provided by the IBM 3270 plus a few extra features including display functions. The display functions include blink and underscore features, which are implemented via the use of attribute codes. The blink and underscore features permit one or more characters to blink or to be underscored via manual or program control.

The 270 is supported under existing IBM software support for the IBM 3270, which includes the following IBM access methods: BTAM under DOS, DOS/VS, OS, or OS/VS2; TCAM under OS; and VTAM under DOS/VS, OS/VS1 or OS/VS2. The 270 is also supported for use with the following IBM Program Products: VIDEO/370, DATA/360, IMS, IQF, CICS, and TSO.

COMPONENTS

KEYBOARD: Any of four keyboard arrangements can be specified, including two typewriter-style, one data entry, and one console keyboard arrangement. The keyboards are similar in layout and key arrangement to the equivalent ➤

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➤ older ones. The tactile keyboard is designed to provide a keypunch-like response. The generally high ratings for maintenance service indicate that most users are pleased, although the large users we interviewed reported spotty service in some areas. □

➤ IBM 3270 keyboards. One of the typewriter arrangements provides 12 Program Function keys clustered to the right of the main keygroup; the other provides a 10-key numeric pad at the right and 12 Program Function keys located in a row above the main keygroup. The data entry keyboard provides 6 Program Function keys interspersed within the main keygroup; the console keyboard provides 12 PF keys.

All keyboard arrangements are available in ASCII or EBCDIC. Keyboard options include Tactile Keys, Audible Alarm, Numeric Lock, and Security Keylock.

PRINTED OUTPUT: Three serial impact printers are currently available. The printers form printed characters within a 5-by-7 or 9-by-7 (Model 2744 only) dot matrix using the wire matrix technique, and are available in the

following models: Model 2740, a 100-cps, 80-column unit (Centronics 306); Model 2742, a 88-cps, 132-column unit (Centronics 588); and Model 2744, a 165-cps, 132-column unit (Centronics 101AL).

All three printers are equipped with a 64-character set of ASCII symbols including upper case alphabets, numerics, and specials. Horizontal and vertical spacing are 10 characters/inch and 6 lines/inch, respectively. The printers accommodate pin-fed, continuous, 5-part forms from 4 to 9½ (Model 2740) or 14-7/8 (Models 2742 and 2744) inches wide.

Courier also provides printer interfaces for the Okidata CP 110, Tally 2000, and GE TermiNet 30 on an RPQ basis.

PRICING

The Courier 270 system is available for purchase or on a 2-through 5-year lease that includes maintenance and installation. A separate maintenance contract is available for purchased units.

2700 Cluster Configuration

Display Unit:

2700-1 (480 chars.)**
2700-2 (960 chars.)**
2700-3 (1920 chars.)**

Local Controller:

Model 2721
Model 2722 (dual controller)

Remote Controller:

Model 2710
Model 2711
Model 2712 (dual controller)

Transmission Speed Option, 720/9600 bps

Device Adapter:

For controller Models 2721 & 2711
For dual controller Models 2722 & 2712

2730 Printer Controller (buffered)

2750 Stand-Alone Configuration

2750-1 (480 chars.)
2750-2 (960 chars.)
2750-3 (1920 chars.)

Options for 2700 & 2750

Numeric Pad (for typewriter-style keyboard only)
Console Keyboard
Audible Alarm
Keyboard Numeric Lock
Security Keylock
Badge Reader
Light Pen
Lower Case

Options for 2750 only

2735 Printer Controller
Printer Adapter
Dial-up (600/1200 bps operator-selectable speeds)

Printers

Model 2740
Model 2742
Model 2744
Lower Case Option:
Models 2740 & 2742
Model 2744

Monthly Rental*

	2-Year Lease	3-Year Lease	Purchase	Monthly Maint.
2700-1 (480 chars.)**	\$ 111	\$ 98	\$3,100	\$22
2700-2 (960 chars.)**	111	98	3,100	22
2700-3 (1920 chars.)**	121	106	3,300	22
Model 2721	230	203	4,900	35
Model 2722 (dual controller)	360	317	8,750	35
Model 2710	135	123	4,200	25
Model 2711	180	166	4,500	25
Model 2712 (dual controller)	270	244	8,100	25
Transmission Speed Option, 720/9600 bps	5	5	150	0
For controller Models 2721 & 2711	25	21	450	0
For dual controller Models 2722 & 2712	50	42	900	0
2730 Printer Controller (buffered)	75	67	2,300	10
2750-1 (480 chars.)	143	129	4,150	25
2750-2 (960 chars.)	143	129	4,150	25
2750-3 (1920 chars.)	157	139	4,250	25
Numeric Pad (for typewriter-style keyboard only)	6	6	240	0
Console Keyboard	10	9	400	3
Audible Alarm	3	3	120	0
Keyboard Numeric Lock	0	0	0	0
Security Keylock	30***	30***	30***	0
Badge Reader	25	24	1,000	3
Light Pen	24	22	800	3
Lower Case	5	5	175	0
2735 Printer Controller	75	67	2,300	10
Printer Adapter	0	0	0	0
Dial-up (600/1200 bps operator-selectable speeds)	9	9	300	2
Model 2740	100	93	2,300	20
Model 2742	127	116	3,170	20
Model 2744	160	144	3,800	30
Models 2740 & 2742	20	20	750	0
Model 2744	15	15	500	0

* Monthly rental prices under a two- or three-year lease include prime-shift maintenance.

** Includes a special function, data entry, or typewriter-style keyboard.

*** One-time charge. ■