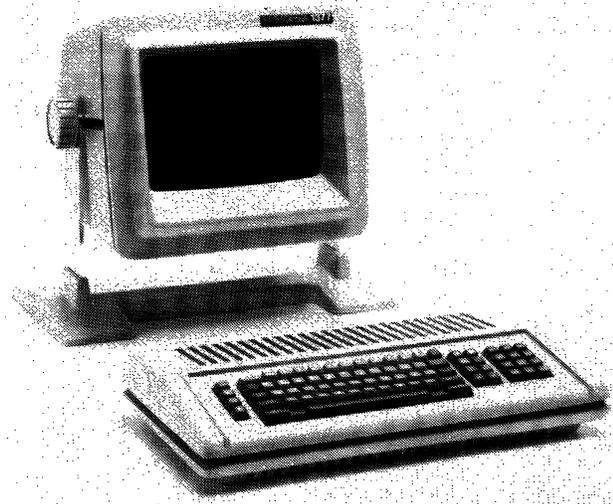


Memorex 1377 Display Station



MANAGEMENT SUMMARY

Well known in the industry as one of the early vendors of IBM replacement disk drives, Memorex introduced itself to the IBM 3270, 3790, and System/3 markets in January 1976 as a vendor of IBM replacement display stations. Its 1377 Display Station is a replacement for IBM's large-screen 3277 Model 2 Display Station, a 1920-character CRT display unit that can be used in local or remote cluster arrangements. IBM 3270 users can expand their existing installations and/or replace existing IBM display stations with the 1377, which provides complete compatibility with the IBM 3277 Model 2 Display Station. No hardware or software changes are required. IBM cables must be used to attach the 1377 units to the IBM controller.

All current functions and capabilities of the IBM 3277-2 have been implemented in the 1377. Plus, a few enhancements give the 1377 a slight edge over its IBM counterpart in operating flexibility. Key enhancements include a no-cost option for displaying true upper and lower case alphabets, a 25th displayable status line in place of the IBM 3270's LEDs, and a black-on-white cursor for ease of cursor location. Incidentally, the 25th display line also shows a numeric row and column current cursor address. The standard 1377 includes a 78-key typewriter-style keyboard with 12 Program Function keys. The user can specify a 66-key data entry keyboard in its place at no added cost. A 78-key operator console keyboard (in place of the others) is just \$5 extra. Also, Memorex provides seven international keyboards.

Audible Alarm and Numeric Lock, both IBM 3270 options, are standard Memorex 1377 features. Memorex does not currently offer an Operator ID Card Reader, available from IBM, but it does offer a Selector Light Pen and Security Keylock as options. ➤

Interchangeable replacement for IBM 3277-2 Display Station. No controller, printer, or ID card reader is available from Memorex.

Includes all standard and optional IBM 3277-2 features plus a few key enhancements. Display screen tilts for operator convenience.

Monthly savings of up to 32 percent can be realized. For purchased units, the savings is 25 percent compared to IBM's price tag.

CHARACTERISTICS

VENDOR: Memorex Corporation, Equipment Products Group, San Thomas at Central Expressway, Santa Clara, California 95052. Telephone (408) 987-1000.

DATE OF ANNOUNCEMENT: January 1976.

DATE OF FIRST DELIVERY: May 1976.

NUMBER DELIVERED TO DATE: Over 100.

SERVICED BY: Memorex.

CONFIGURATION

The Memorex 1377 Display Station is interchangeable with the IBM 3277 Model 2 Display Station on the IBM 3272 Model 2 Local Control Unit, the IBM 3271 Models 2 or 12 Remote Control Unit, or IBM 3291 Control Unit via existing IBM cables.

TRANSMISSION SPECIFICATIONS

Applicable to the IBM 3271 Models 2 and 12 control units and the IBM 3291 control unit. See IBM 3270 Information Display Systems, Report C25-491-101 and IBM 3790 Communication System, Report C25-491-101.

DEVICE CONTROL

The microprocessor-based Memorex 1377 provides all the functions that are currently provided by the IBM 3277 Model 2 Display Station plus a few of its own. The added features include a displayable status line (25th line) that displays system status (in place of IBM's LED status indicators) and cursor row and column address for operator convenience in the entry of position-sensitive data; a reverse-video cursor (black on white); and a displayable set of upper and lower case alphabets (a no-cost option). Standard features include adjustable Audible Alarm and Numeric Lock. Optional features include a Selector Light Pen and Security Keylock.

COMPONENTS

The Memorex 1377 is composed of a display unit and a separate keyboard. The CRT display screen measures 15 inches diagonally and is mounted in a desk-top stand designed to allow tilting the display in a vertical place to minimize screen glare. The display arrangement is identical with that of the IBM 3277 Model 2 Display Station—24 lines of 80 character positions each, totaling 1920 character ➤

Memorex 1377 Display Station

➤ Potential users will also appreciate the fact that the Memorex 1377 weighs half as much and produces less than half the heat dissipation as the IBM 3277-2. □

➤ positions; however, the Memorex 1377 displays a 25th line for stations information. The display area measures 7 inches high by 9.5 inches wide. Each character is formed via a 7-by 9-dot matrix.

The display unit measures 20 inches wide by 18.3 inches high by 15.7 inches deep and weighs 39 pounds. Heat dissipation is 265 BTU/hr. By comparison, the IBM 3277 Model 2 measures 16 inches wide by 19 inches high by 21 inches deep and weighs 85 pounds. Its heat dissipation is 525 BTU/hr.

Three keyboards are available: a 78-key EBCDIC typewriter-style keyboard with 12 Program Function Keys, a 66-key EBCDIC data entry keyboard, and a 78-key EBCDIC operator console keyboard; each is identical with

its IBM counterpart. The Memorex 1377 keyboards can be located up to two cable-feet from the display unit.

The keyboards each measure 20 inches wide by 3.9 inches high by 12 inches deep and weigh 10 pounds. By comparison, the IBM 3277-2 keyboard measures 15¼ to 18 (78-key keyboard) inches wide by 4 inches high by 8½ inches deep and weighs 10 pounds.

PRICING

The Memorex 1377 Display Station is available for purchase or under a one- or two-year lease including maintenance on a basis of 24 hours per day, 7 days per week. Installation charges are \$25 per display station, but the Memorex 1377 is customer installable. The investment tax credit is passed on to the customer for leased or purchased units. Training is minimal since there is slight difference between the IBM and Memorex display stations. An operation and service manual is included with the installation. The Memorex 1377 is priced as follows:

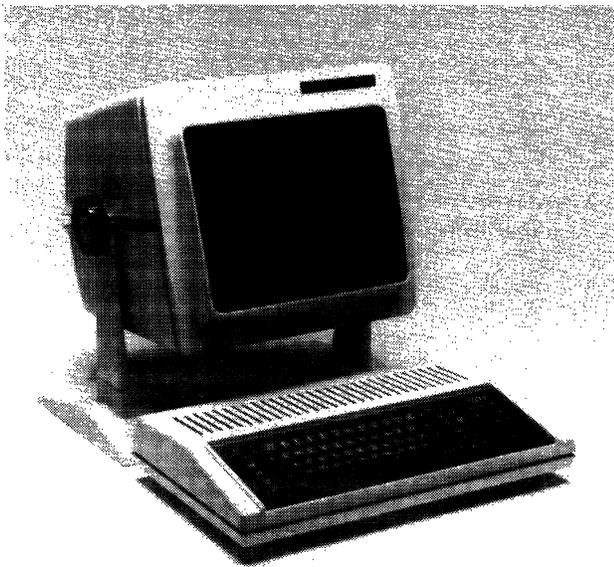
	Monthly Rental*			Monthly Maint.
	1-Yr. Lease	2-Yr. Lease	Purchase	
Memorex 1377 Display Station**	\$130	\$110	\$3,800	\$20
Data Entry keyboard	N/C	N/C	N/C	N/C
Operator Console Keyboard	5	5	100	5
Selector Light pen	28	28	875	2
Security Keylock	35***	35***	35***	—

* Includes maintenance for 24 hours/day, 7 days/week.

** Includes 78-key typewriter-style EBCDIC keyboard, audible alarm, and numeric lock features.

***Single use charge. ■

Memorex 137X Video Display Subsystem



The Memorex 1377 Display Station, an IBM 3277-2 plug-compatible replacement, is highly rated by its users. Two notable features they point to are the reverse-video cursor and the tiltable display module for screen readability.

MANAGEMENT SUMMARY

The Memorex 1377 Display Station is a replacement for IBM's 3277 Display station, a 1920-character display unit used in local and remote cluster configurations. IBM 3270 users can expand their existing installations and/or replace existing IBM display stations with the 1377, which provides complete compatibility with the IBM 3277 Model 2 Display Station. No hardware or software changes are required. IBM compatible cables must be used to attach the 1377 units to the IBM controller. Obviously, the 1377 can also be attached to the Memorex 1371 and 1372 controllers in a remote or local cluster arrangement.

Memorex expanded its IBM 3270-compatible product line in March 1978 with the addition of two controllers and a line printer. The Memorex controllers are plug-compatible with the IBM 3271 (remote) and 3272 (local) control units and can support up to 32 devices including any mix of Memorex 1377 Display Stations, Memorex 2089 medium-speed line printers, IBM 3277 displays, and IBM 3280 series printers. Purchased from MDS Trivex, Inc., the controllers monitor and store status reports on operational terminals and provide continuous on-line diagnostics.

The new Memorex 2089 Line Printer is functionally equivalent to the IBM 3288 Line Printers and is both interface and software compatible with IBM's 3284 and 3286 printers. The Memorex 2089 can be attached to the IBM 3271 or 3272 control units, IBM System/3 computer, or 3790 Communication System. The 2089 printer em- ➤

Enhanced replacements for the IBM 3277-2 Display Station, 3280 series printers, and 3271/3272 remote and local terminal clusters.

Display station includes all standard and optional IBM 3277-2 features plus a few key enhancements. Display screen tilts for operator convenience. Belt printer rates range from 75 to 415 lpm. The controllers are equipped with diagnostic and status reporting features.

Existing IBM 3277-2 Displays and 3280 series printers are supported by the Memorex controllers, and conversely, the Memorex 1377 Display and 2089 Printer can be attached to IBM 3271 and 3272 controllers.

The 1377 Display leases for \$80 per month, including maintenance, under a two-year lease. The 2089 Printer ranges from \$361 to \$442 per month including maintenance, under a two-year lease. The 1371 Remote Controller leases for \$246 per month, while the 1372 Local Controller leases for \$267 per month, under a two-year lease.

CHARACTERISTICS

VENDOR: Memorex Corporation, Communications Group, 18922 Forge Drive, Cupertino, California 95014. Telephone (408) 996-9000.

DATE OF ANNOUNCEMENT: Model 1377 Display Station—January 1976 (with enhancements in January 1977). Model 1371 and 1372 Controllers and Model 2089 Line Printer—March 1978.

DATE OF FIRST DELIVERY: Model 1377 Display Station—February 1976 (enhanced version—February 1977). Model 1371 and 1372 Controllers and Model 2089 Line Printer—February 1978 (before public announcement).

NUMBER DELIVERED TO DATE: Over 35,000 display units.

SERVICED BY: Memorex.

CONFIGURATION

Subsystem components include the 1377 Display Station, 1371 Remote Controller, 1372 Local Controller, and 2089 Line Printer. The 1377 Display Station is interchangeable with the IBM 3277 Model 2 Display Station on the IBM 3272 Model 2 Local Control Unit, the IBM 3271 Remote Control Unit Model 2 or 12, IBM 3791 Control Unit or the ICA on the IBM System/3. The 2089 Line Printer with 8330 attachment can also be attached to the above IBM controllers. The 2089 Line Printer is hardware and software compatible with the IBM 3284, 3286, and 3288 printers. ➤

Memorex 137X Video Display Subsystem

► employs the Teletype 40 belt printer mechanism that prints fully-formed characters and is available in three models that range in speed from 75 to 415 lines per minute, depending on the character set used. The printer is available with character sets of 48, 64, or 96 characters for both ASCII and EBCDIC codes and international character sets are optional.

All current functions and capabilities of the IBM 3277-2 have been implemented in the 1377. Plus, a few enhancements give the 1377 an edge over its IBM counterpart in operating flexibility. Key enhancements include a no-cost option for displaying true upper and lower case alphabets, a 25th displayable status line in place of the IBM 3270's LED, and a reverse video cursor for cursor visibility. Incidentally, the 25th display line also shows a numeric row and column current cursor address.

The Audible Alarm and Numeric Lock are both IBM 3270 options: on the Memorex 1377 Display Station, the Audible Alarm is a standard feature and the Numeric Lock is a no-cost option. Memorex does not currently offer an Operator ID Card Reader, available from IBM, but it does offer a Selector Light Pen and Security Keylock as options.

Potential users will also appreciate the fact that the Memorex 1377 weighs half as much and produces less than half the heat dissipation of the IBM 3277-2.

Memorex's current market is IBM 3270 installations composed of IBM 3277 displays, 3284 and 3286 printers, and IBM 3271 and 3272 controllers. Memorex plans to become 100 percent compatible with IBM's 3270 offerings with future products targeted for delivery later this year. Memorex also plans to introduce enhancements currently not available with IBM's products. Memorex claims its competitive edge over IBM is availability and value added.

USER REACTION

In early May 1980, Datapro conducted telephone interviews with eight 1377 Display Station users, four of whom were respondents to our 1980 Alphanumeric Display Users Survey and four others whose names were supplied to us by Memorex. These users reported on their experience with 312 1377 terminals. The largest number of 1377 display terminals that any one user had was 104; the fewest was 8; the average number of terminals per user was 39.

The organizations represented by these users included a midwestern wholesale food distributor, an eastern cargo airline, a southern commercial bank, an eastern engineering/consulting firm, a midwestern manufacturing company, a southwestern information processing company, a northwestern county government, and a southern life insurance company. Most users were using the 1377 terminals for data entry and program development applications. Text editing and system console were also mentioned as applications.

► The 1371 Remote Controller and 1372 Local Controller are plug-compatible replacements for the IBM 3271 and 3272 Control Units, respectively. Each can accommodate up to 32 devices, including any mix of 1377 Display Stations and 2089 Line Printers. The basic 1371 and 1372 Controllers support up to eight devices. A device adapter is required for each additional increment of 8 devices up to a total of 3 device adapters for 32 devices. The controllers provide individual buffering for each device, which can be located up to 2000 cable-feet from the controller.

Model 1371, the remote controller, supports BSC protocol and attaches to a communications facility via a modem; the maximum cable length between controller and modem is 50 feet. Model 1372, the local controller, contains a channel interface for direct connection (up to 200 cable-feet) to an IBM System/360 Model 25 through 195 and IBM System/370 Model 115 through 195 via a selector, byte, multiplexer, or block multiplexer channel. The data transfer rate can range up to 19.2K bps.

TRANSMISSION SPECIFICATIONS

The 1371 Remote Controller transmits synchronously in the half-duplex mode at switch-selectable rates up to 9600 bits/second using 8-level EBCDIC transmission code. The controller is equipped with an RS-232-C interface for connection to a voice-guide facility via a modem. Bell System modems that can be used include the 103A/F or 113A/B (up to 300 bps) and the Dataphone 1200, 1800, 2400, 4800, or 9600.

DEVICE CONTROL

The Memorex controllers operate under the control of the program stored at the computer and provides complete compatibility with the addressing sequence, command code structure, and line discipline employed by the IBM 3270 Information Display System. The controllers respond to and execute the full repertoire of IBM 3270 commands via a firmware-controlled microprocessor.

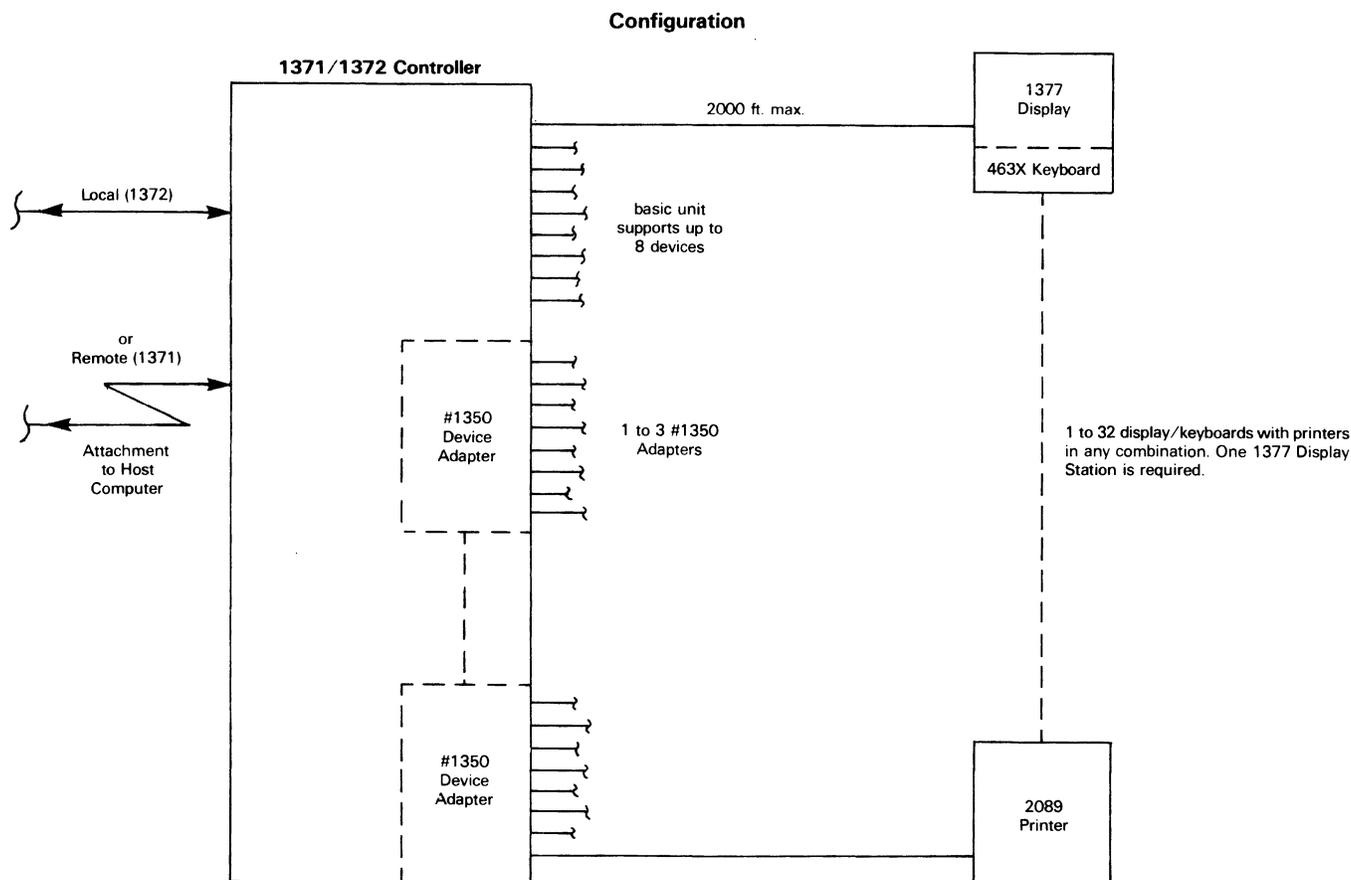
The microprocessor-based Memorex 1377 provides all the functions that are currently provided by the IBM 3277 Model 2 Display Station plus a few of its own. The added features include a displayable status line (25th line) that displays system status (in place of IBM's LED status indicators) and cursor row and column address for operator convenience in the entry of position-sensitive data; a reverse-video cursor; and a displayable set of upper and lower case alphabets (a no-cost option). Standard features include adjustable Audible Alarm and Numeric Lock. Optional features include a Selector Light Pen and Security Keylock.

Program Function and Program Attention keys, standard features of the IBM 3270, are also standard. Each of these keys generates a unique code that is recognized by the controlling software as a specific program request or data identifier. Program Function codes accompany the display data as it is transmitted to the computer, while Program Attention codes are transmitted separately.

The optional light pen functionally corresponds to IBM's Selector Pen, a 3270 option. Any one or several alphanumeric or numeric fields of fixed or variable formats can be selected by the pen, which transmits the address of the selected entry to the computer to initiate the programmed function.

Structured data entry, a la displayable formats, is supported via attribute codes, which define protected fields, delimit data entry fields, and specify display parameters and tab stop positions. The user of attribute codes is the same as for the IBM 3270. Character and field blanking can be specified by the program, which can also specify high or low beam intensity.

Memorex 137X Video Display Subsystem



➤ The users' ratings are tabulated below:

	Excellent	Good	Fair	Poor	WA*
Overall performance	6	2	0	0	3.8
Ease of operation	5	3	0	0	3.6
Display clarity	5	3	0	0	3.6
Keyboard feel and usability	4	3	1	0	3.4
Hardware reliability	6	2	0	0	3.8
Maintenance service	2	4	2	0	3.0
Technical support	1	4	0	0	3.2

*Weighted Average on a scale of 4.0 for Excellent.

These users on the whole were very pleased with their 1377 Display Stations. In general, they praised availability, price, and reliability. Some (3 users) felt that the Memorex unit was every bit as good as the IBM displays that they had. One advantage over the IBM 3277, which was indicated by several (3) users, was the readability of the screen cursor of the Memorex 1377; another was the tiltable display module. Users generally agree that delivery and maintenance were prompt. One user complained about the recent rise in the monthly maintenance charge since maintenance was seldom needed. Nearly all (7 out of 8) users said yes, when asked if they would recommend the Memorex 1377 to others as an IBM 3277 plug-compatible replacement. □

➤ **Edit controls are the same as those for the IBM 3270 and include character insertion and deletion within a field, screen (and memory) erasure, field erasure, partial field erasure**

(specified by the cursor position), and duplication of data specified by a unique code, which is displayed as an asterisk.

The audible alarm alerts the operator upon illegal entry.

The Display Print option provides a local copy capability, without intervention from the host. Two local print modes are provided. Priority Print produces a printed copy of the entire contents of the display buffer by the first available printer. Assigned Print prints the contents of a display buffer on a printer assigned by the display station operator. A resident diagnostic program isolated faults in this subsystem; the controller will not go on-line after initial power-on until the diagnostic program has cycled successfully. A status report on each operational device is stored for display or printing.

COMPONENTS

DISPLAY UNIT: The Memorex 1377 is composed of a display unit and separate keyboard. The CRT display screen measures 15 inches diagonally and is mounted in a desk-top stand designed to allow tilting the display vertically to minimize screen glare. The display arrangement is identical with that of the IBM 3277 Model 2 Display Station—24 lines of 80 character positions each, totaling 1920 character positions; however, the Memorex 1377 displays a 25th line for stations information. The display areas measure 7 inches high by 9.5 inches wide. A total of 89 symbols are displayable. Each character is formed via a 7-by-8 or 7-by-10 (lower case) dot matrix.

The display unit measures 20 inches wide by 18.3 inches high by 15.7 inches deep and weighs 45 pounds. Heat dissipation is 265 BTU/hr. By comparison, the IBM 3277 Model 2 measures 16 inches wide by 19 inches high by 21 inches deep and weighs 85 pounds. Its heat dissipation is 525 BTU/hr. ➤

Memorex 137X Video Display Subsystem

► **KEYBOARD:** Four keyboards are available: a 78-key EBCDIC typewriter-style keyboard with 12 Program Function Keys, a 66-key EBCDIC date entry keyboard, a 66-key EBCDIC typewriter keyboard with numeric pad, and a 78-key EBCDIC operator console keyboard. The Memorex 1377 keyboards can be located up to two cable-feet from the display unit.

The keyboards each measure 20 inches wide by 3.9 inches high by 12 inches deep and weigh 11 pounds. By comparison, the IBM 3277-2 keyboard measures 15¼ to 18 (78-key keyboard) inches wide by 4 inches high by 8½ inches deep and weighs 10 pounds.

PRINTER: The 2089 Line Printer is an impact belt printer (Teletype Model 40 mechanism) available in the following models with the corresponding rated speeds (at a 50 characters per line average):

	Character Set		
	48	64	96
2089-2	225 lpm	200 lpm	200 lpm
2089-3	285	285	230
2089-4	415	290	225

The printer features 132 print positions and is available with ASCII or EBCDIC print belts and character sets of 48, 64, or 96 symbols. Horizontal and vertical spacing is 10 characters/inch and 6 lines/inch, respectively. The printer is equipped with adjustable tractor feed and accommodates pinned, 6-part, continuous forms from 4¼ to 15 inches wide. Internal diagnostics verify the printer to be fully functional and operational via a test switch on the operator panel.

PRICING

The Memorex 137X Video Display Subsystem is available for purchase or on a two-year lease including maintenance. A separate maintenance contract is available for purchased equipment.

Monthly Charge*

		2-Year Lease	Purchase	Monthly Maint.
1377	Display Station with choice of keyboard included	\$ 80	\$ 2,600	\$ 25
4100	Upper/Lower Case Alphabets	N/C	N/C	N/C
4631	66-Key EBCDIC Data Entry Keyboard	N/C	N/C	N/C
4632	78-Key EBCDIC Operator Console Keyboard	N/C	N/C	N/C
4633	78-Key EBCDIC Typewriter Keyboard	N/C	N/C	N/C
4690	Keyboard Numeric Lock	N/C	N/C	N/C
4691	66-Key EBCDIC Typewriter Keyboard with Numeric Pad	N/C	N/C	N/C
6340	Security Keylock	35**	35**	N/C
6350	Selector Light Pen	28	875	2
1371	Remote Controller	246	6,050	26
1372	Local Controller	267	6,800	52
1350	Device Adapter	97	1,092	2
2089-2	Line Printer; 150 cps, 64-character set	***	9,000	112
2089-3	Line Printer; 225 cps, 64 character set	361	10,000	121
2089-4	Line Printer; 300 cps, 64 character set	442	11,000	142
8330	Category B interface for 2089 Printer	26	680	3

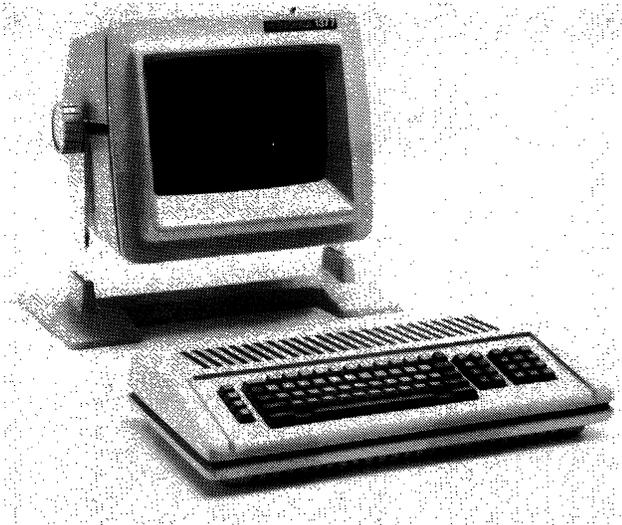
* Includes prime shift maintenance.

** Single use charge.

*** Purchase only.

N/C No charge.■

Memorex 1377 Display Station



Interchangeable replacement for IBM 3277-2 Display Station. No controller, printer, or ID card reader is available from Memorex.

Includes all standard and optional IBM 3277-2 features plus a few key enhancements. Display screen tilts for operator convenience.

Monthly savings of up to 31 percent can be realized. For purchased units, the savings is 23 percent compared to IBM's price tag.

MANAGEMENT SUMMARY

Well known in the industry as one of the early vendors of IBM replacement disk drives, Memorex introduced itself to the IBM 3270, 3790, and System/3 markets in January 1976 as a vendor of IBM replacement display stations. Its 1377 Display Station is a replacement for IBM's large-screen 3277 Model 2 Display Station, a 1920-character CRT display unit that can be used in local or remote cluster arrangements. IBM 3270 users can expand their existing installations and/or replace existing IBM display stations with the 1377, which provides complete compatibility with the IBM 3277 Model 2 Display Station. No hardware or software changes are required. IBM cables must be used to attach the 1377 units to the IBM controller.

In January 1977, Memorex announced an enhanced version of its 1377 Model 2, the 1377 Model 4. The new 1377 Model 4 effectively replaces the Model 2 and features a recessed screen masked in black to eliminate glare from overhead or outside lighting, improved display clarity, half- and full-intensity fields, reduced weight, an added 66-key EBCDIC typewriter-style keyboard with numeric pad, and reduced pricing. The 1377 Model 4 is an even more attractive alternative to the IBM 3277-2 and should receive serious consideration by the prospective IBM user. Memorex also plans to introduce an Operator ID Card Reader (in 90 days) and will be announcing a serial printer rated at 75- to 300-cps in the near future.

All current functions and capabilities of the IBM 3277-2 have been implemented in the 1377. Plus, a few enhancements give the 1377 a slight edge over its IBM counterpart in operating flexibility. Key enhancements include a no-cost option for displaying true upper and lower case alphabets, a 25th displayable status line in place of the IBM 3270's LEDs, and a black-on-white

CHARACTERISTICS

VENDOR: Memorex Corporation, Equipment Products Group, San Thomas at Central Expressway, Santa Clara, California 95052. Telephone (408) 987-1000.

DATE OF ANNOUNCEMENT: Model 2—January 1976; Model 4—January 1977.

DATE OF FIRST DELIVERY: Model 2—May 1976; Model 4—February 1977.

NUMBER DELIVERED TO DATE: Over 1000.

SERVICED BY: Memorex.

CONFIGURATION

The Memorex 1377 Display Station is interchangeable with the IBM 3277 Model 2 Display Station on the IBM 3272 Model 2 Local Control Unit, the IBM 3271 Models 2 or 12 Remote Control Unit, IBM 3791 Control Unit via existing IBM cables, or the ICA on the IBM System/3.

TRANSMISSION SPECIFICATIONS

Applicable to the IBM 3271 Models 2 and 12 control units and the IBM 3791 control unit. See IBM 3270 Information Display Systems, Report C25-491-101 and IBM 3790 Communication System, Report C21-491-101.

DEVICE CONTROL

The microprocessor-based Memorex 1377 provides all the functions that are currently provided by the IBM 3277 Model 2 Display Station plus a few of its own. The added features include a displayable status line (25th line) that displays system status (in place of IBM's LED status indicators) and cursor row and column address for operator convenience in the entry of position-sensitive data; a reverse-video cursor (black on white); and a displayable set of upper and lower case alphabets (a no-cost option). Standard features include adjustable Audible Alarm and Numeric Lock. Optional features include a Selector Light Pen and Security Keylock.

COMPONENTS

The Memorex 1377 is composed of a display unit and a separate keyboard. The CRT display screen measures 15 inches diagonally and is mounted in a desk-top stand designed to allow tilting the display in a vertical place to

Memorex 1377 Display Station

▷ cursor for ease of cursor location. Incidentally, the 25th display line also shows a numeric row and column current cursor address.

Audible Alarm and Numeric Lock, both IBM 3270 options, are standard Memorex 1377 features. Memorex does not currently offer an Operator ID Card Reader, available from IBM, but it does offer a Selector Light Pen and Security Keylock as options.

Potential users will also appreciate the fact that the Memorex 1377 weighs half as much and produces less than half the heat dissipation as the IBM 3277-2. □

▶ minimize screen glare. The display arrangement is identical with that of the IBM 3277 Model 2 Display Station—24 lines of 80 character positions each, totaling 1920 character positions; however, the Memorex 1377 displays a 25th line for stations information. The display area measures 7 inches high by 9.5 inches wide. A total of 89 symbols are displayable. Each character is formed via a 7-by-8 or 7-by-10 (lower case) dot matrix.

The display unit measures 20 inches wide by 18.3 inches high by 15.7 inches deep and weighs 45 pounds. Heat dissipation is 265 BTU/hr. By comparison, the IBM 3277 Model 2

measures 16 inches wide by 19 inches high by 21 inches deep and weighs 85 pounds. Its heat dissipation is 525 BTU/hr.

Four keyboards are available: a 78-key EBCDIC typewriter-style keyboard with 12 Program Function Keys, a 66-key EBCDIC date entry keyboard, a 66-key EBCDIC typewriter keyboard with numeric pad, and a 78-key EBCDIC operator console keyboard; each is identical with its IBM counterpart. The Memorex 1377 keyboards can be located up to two cable-feet from the display unit.

The keyboards each measure 20 inches wide by 3.9 inches high by 12 inches deep and weigh 11 pounds. By comparison, the IBM 3277-2 keyboard measures 15¼ to 18 (78-key keyboard) inches wide by 4 inches high by 8½ inches deep and weighs 10 pounds.

PRICING

The Memorex 1377 Display Station is available for purchase or under a one- or two-year lease including maintenance on a basis of 24 hours per day, 7 days per week. Installation charges are \$25 per display station, but the Memorex 1377 is customer installable. The investment tax credit is passed on to the customer for leased or purchased units. Training is minimal since there is slight difference between the IBM and Memorex display stations. An operation and service manual is included with the installation. The Memorex 1377 is priced as follows:

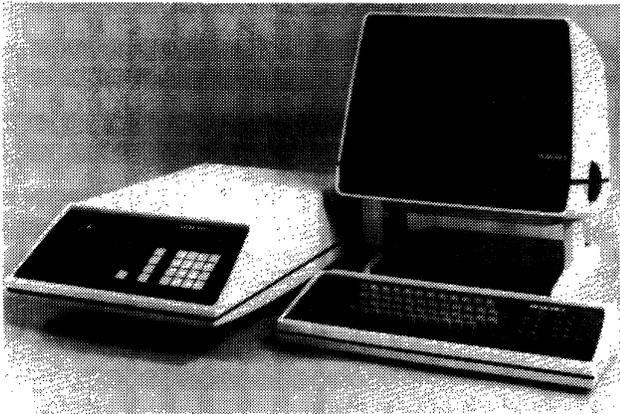
		Monthly Rental*			
		1-Yr. Lease	2-Yr. Lease	Purchase	Monthly Maint.
1377-4	Display Station (without keyboard)	\$110	\$90	\$3,400	\$10
4100	Upper/Lower Case Alphabets	N/C	N/C	N/C	N/C
4631	66-key EBCDIC Data Entry Keyboard	10	10	200	5
4632	78-key EBCDIC Operator Console Keyboard	25	25	500	5
4633	78-key EBCDIC Typewriter Keyboard	20	20	400	5
4690	Keyboard Numeric Lock	N/C	N/C	N/C	N/C
4691	66-Key EBCDIC Typewriter Keyboard with Numeric Pad	30	30	600	7
6340	Security Keylock	35**	35**	35	N/C
6350	Selector Light Pen	28	28	875	2

* Includes prime-shift maintenance

**Single use charge

N/C No charge. ●

Memorex 2078 Display Station



Shown with the Memorex 2076 Remote Cluster Controller, the 2078 Display Station provides a direct functional replacement for the IBM 3278 Models 1 and 2.

MANAGEMENT SUMMARY

The Memorex 2078 Display Station is designed to be a direct functional replacement for the IBM 3278 Models 1 and 2 display stations. The new terminal can enter and display data to and from an IBM System/360, /370, 303X, and 4300 via the new Memorex 2076 Remote Cluster Controller, an IBM 3274, or an IBM 3276 Control Unit.

The 2078 is available in two models each of which provides a tiltable screen with a non-glare finish, a detachable monitor, line and column indicator, automatic screen dim when the terminal is not in use, a non-display mode, N-Key rollover, dual intensity display, and a cursor select feature which provides an alternative to a light pen.

The 2078 Model 1 displays up to 960 characters in 12 data lines of 80 characters each. The Model 2 displays up to 1920 characters in a 24 line format of 80 characters each. Both models provide an additional line for displaying terminal status. An upper and lower case alphanumeric character set is formed within a 7 by 14 dot matrix; upper case characters are formed by a 7 by 9 dot matrix.

Several keyboard configurations are available to meet user requirements; a 75-key EBCDIC or ASCII typewriter-style, a 75-key EBCDIC data entry format, and an 87-key EBCDIC or ASCII typewriter layout. An optional keyboard Numeric Lock limits input in specific fields to numeric data only. In this context, numeric data includes the ten decimal digits, minus or hyphen, the DUP key, and the decimal point. If any symbol other than those mentioned is entered, the Input Inhibit symbol appears on the status line of the screen.

Binary synchronous data transmission is performed over leased or dial-up communication lines via appropriate modems, communication controller, and channels. The transmission speeds are determined by the communication- ➤

A direct replacement for the IBM 3278 Models 1 and 2 Display Stations. Designed to be compatible with the IBM System/ 360, /370, 303X, and 4300 via either an IBM 3274 and 3276 Control Unit or the new Memorex 2076 Remote Cluster Controller.

The 2078 Model 1 displays up to 960 characters and the Model 2 has a display capacity of 1920 characters. Both models provide standard features such as tiltable monitor, non-glare screen, automatic screen dim, N-Key rollover, dual intensity display, and a cursor select feature which provides an alternative to a light pen.

The 2078 is available on a purchase basis only and is priced from \$2,431 for the Model 1 to \$2,996 for the Model 2.

CHARACTERISTICS

VENDOR: Memorex Corporation, Communications Group, 18922 Forge Drive, Cupertino, CA 95014. Telephone (408) 996-9000.

DATE OF ANNOUNCEMENT: February 1980.

DATE OF FIRST DELIVERY: February 29, 1980.

SERVICED BY: Memorex Corporation.

CONFIGURATION

The 2078 Display Station Models 1 and 2 are functionally interchangeable with the IBM 3278 Model 1 and 2 Display Stations. Both models can be configured with either a Memorex 2076 Controller, an IBM 3274 Control Unit, or an IBM 3276 Control Unit; or via the display/printer adapter of the 4331 Processor. Compatible mainframes include the IBM System/360, /370, 303X and 4300. Up to eight devices which may be display stations, printers or a mix of display stations and printers can be configured with the Control Unit.

DEVICE CONTROL

The cursor movement on the 2078 is controlled by seven keys on the typewriter keyboard and eight on the data entry keyboard. They include: New Line, Backspace, Tab (SKIP), Backtab, Home, Up, Down, Left, and Right.

The Cursor Select key permits the cursor to be used in the same way as a light pen. This is in addition to the cursor's basic function of identifying a location for character entry or deletion. After moving the cursor to a selectable field on the screen, the operator depresses the Cursor Select key. This signals the host computer to take action called for by its program, applied to the character identified by the cursor location.

The 2078 display station is under the direct control of the Memorex 2076 Model 4 Remote Cluster Controller, the IBM ➤

Memorex 2078 Display Station

- tions controller and range from 600 to 9600 bits per second via an EIA RS-232-C interface cable for modem attachment.

The 2078 provides an optional light pen which allows the user to select data from the screen for computer input. The terminal also provides an optional, operator selectable Mark Unprotected Field Indicator. This feature displays a dot in each character position of an unprotected field for easy field size identification. These dots are not transmitted and are replaced by characters as data is keyed in by the operator. □

- 3276 Control Unit Display Stations, or the IBM 3274 Control Unit.

The 2076 Controller is capable of controlling up to eight terminal devices. The devices can be display terminals, printers, and/or line printers in any combination. The 2076 supports BSC protocol using EBCDIC code.

Three types of diagnostic programs are built into the 2076; Power On, Off-Line, and On-Line. Power On automatically runs whenever power is turned on. The controller will not go on-line until this program has cycled successfully. Off-Line is designed to be used by field engineering as a system maintenance aid. It provides a variety of information on all devices connected to the 2076 and the controller communications line. On-Line is used by the user. It provides information about the device adapters, coaxial cables, and attached devices.

TRANSMISSION SPECIFICATIONS

Data transmission between the 2078 terminal and controller is serial via a coaxial cable. The interface is half-duplex. Data is manipulated in parallel words of 8 to 12-bits depending on the function; codes from the keyboard are 8-bit parallel.

EBCDIC coded binary synchronous transmission speed via the 2076 Remote Cluster Controller is user-selectable at 600, 1200, 2000, 2400, 4800, 7200 or 9600 bits per second in half- or full-duplex. The EIA RS-232-C interface is connected by a cable to the external modem.

COMPONENTS

2078 DISPLAY MODEL 1: A 15-inch diagonal screen which displays 12 data lines of 80 characters each with an additional line for terminal status. A Line and Column indicator is displayed on the status line. Characters are formed by a 7 by 14 dot matrix; with upper case characters formed by a 7 by 9 dot matrix. The non-glare monitor can be tilted between 30° above and 15° below horizontal for operator convenience. The monitor can also be detached from the stand for

placement on a shelf to conserve space at a work station. An automatic dimming of the display occurs if there is no activity from the keyboard for approximately twenty minutes. Full brightness is restored when the operator strikes any key.

An optional Mark Unprotected Field Indicator displays a dot in each character position of unprotected fields for determination of field size. These dots are not transmitted and are replaced by characters as data is keyed in by the operator. Also a Non-Display Mode allows blanking out of certain fields under program control.

KEYBOARD: There are three keyboard configurations which can be selected by the user to meet specific requirements. A 75-Key EBCDIC typewriter keyboard layout provides 49 alphanumeric data keys and 26 control keys. Twelve program function keys are available through the use of the alternate shift keys. A third program access key is operational when the 2078 is attached to a 2076 Remote Cluster Controller.

A 75-Key EBCDIC or ASCII data entry keyboard is arranged in a data entry format and provides 35 data keys, 10 program function keys and 30 control keys.

An 87-Key EBCDIC or ASCII typewriter keyboard format provides 49 alphanumeric data keys, 26 control keys and 12 program function keys which are available through the use of the alternate shift key. A third program access key is operational when the 2078 is attached to a Memorex Remote Cluster Controller.

Most of the keys on the keyboard are Typamatic; that is, they repeat their functions when held down. On the data entry keyboard DUP and FIELD MARK are also Typamatic. The operator can choose whether or not an audible click to the keys is desired.

An optional Keyboard Numeric Lock limits inputs in specified fields to numeric data only; i.e., ten decimal digits, minus sign, the DUP key, and the decimal point. If any other character is entered without additional manual intervention, the Input Inhibited symbol appears in the information area.

LIGHT PEN: A light-sensitive device with which the user can select a particular character or field on the screen for computer input. The operator simply presses the wand-like pen against the screen at the desired point. Both normal- and high-intensity fields can be selected with the pen.

PRICING

The 2078 Display Stations are available for purchase only. The 2078 purchase prices range from \$2,431 for the Model 1 with 75-key typewriter keyboard (excluding maintenance and options) to \$2,996 for the Model 2 with 75-key typewriter keyboard. Monthly maintenance charge is \$18 per month. ■