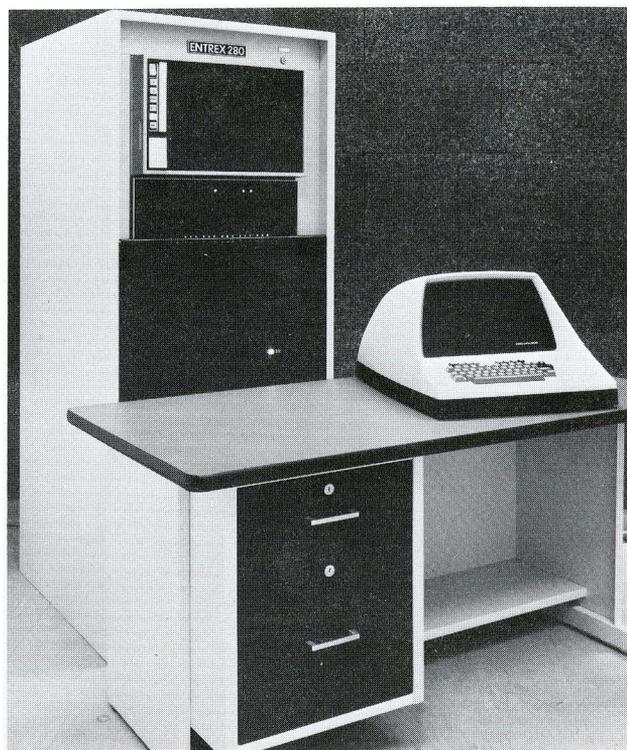


ENTREX SYSTEM 280

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Entrex System 280



A System 280 CRT keystation is shown in the foreground. At rear is the compact central control group, which contains a minicomputer, disk drive, and magnetic tape drive.

MANAGEMENT SUMMARY

Entrex has moved to close its market gap. Through the introduction of System 280, the company is appealing to two major user categories that its previous product mainstay, System 480, overshoots. One is the low-volume data entry operation that employs only a handful of key stations; the other consists of those who need some sophistication in editing and validation but are still not ready for the ultimate. Or, to put the matter another way, System 280 is aimed at those who desire an economical facility that will substantially upgrade their throughput compared with keypunching or key-to-tape operation without incurring the cost of features that cannot yet be utilized.

The Bisynchronous Communications controller that is offered with System 280 (either in place of or in addition to a tape drive) enables the system to also perform as a remote intelligent terminal. Hence, several keystations can be distributed among strategic locations within a source data facility (up to 1000 feet from the Central Controller if connected by cable), and the purified, formatted output data from the system can then be transmitted to an IBM System/360 or 370 computer at the data processing center. In the past, key-to-disk systems have not often been visualized in terms of remote terminal operation, but System 280 appears well

System 280 is a multistation shared-processor data entry system with a limit of eight CRT keystations. Keypunch and typewriter keyboards are both available. Output consists of 7- or 9-track IBM-compatible magnetic tape or transmitted formatted data.

CHARACTERISTICS

MANUFACTURER: Entrex, Inc., 168 Middlesex Turnpike, Burlington, Massachusetts 01803. Telephone (617) 273-0480.

CONFIGURATION

The Entrex System 280 incorporates up to eight DATA/SCOPE keystations (one serves as a supervisory station), a minicomputer processor, one magnetic disc drive, and one magnetic tape drive. A central control group, consisting of the processor, disk drive unit, and tape drive, are housed together in a single cabinet. Optional I/O devices are a card reader and both a serial printer and a line printer. An optional communications controller and suitable modems supplied by the user can be added. OCR input is excluded. A keystation can be cable-connected to the central control group at a distance of up to 1000 feet.

DATA/SCOPE KEYSTATIONS: Consist of a keyboard and a CRT display directly behind it. The user can select either an IBM 29 Card Punch or typewriter keyboard pattern, but cannot intermix the two. Each keyboard also includes 17 function keys, and a 10-key numeric pad is situated to the right of the typewriter-style keys. Both keyboards implement a set of 64 characters. System 280 employs keystations that are functionally the same as those in System 480.

The CRT display of System 280 presents 9 lines of 40 characters each for a total of 360. System status and error messages utilize up to 80 characters, and keyed data and field names (tags) consume 280. Status information appears in the top line and error messages in the second; this line is normally blank. The remaining seven lines are devoted to data, whether it is being entered, verified, or examined. The display includes a cursor, which is a blinking rectangle of light equivalent to one character in size. It indicates where the next character will appear on the display.

CENTRAL PROCESSOR: The processor, a Data General Nova, has a 1.2-microsecond cycle time, a 16-bit word length, and a 32,768-byte maximum storage capacity as employed in System 280. Power failure detection and automatic restart features are present.

DISK DRIVE: This single-disk Diablo unit utilizes two recording surfaces for a total capacity of 1.8 million bytes. Average, maximum, and track-to-track positioning times are 67, 135, and 15 milliseconds, respectively. Average rotational delay is 20 milliseconds, and data transfer rate is 1.56 million bits/second. The unit has movable read/write heads that retract automatically upon power failure. An additional unit can be installed if required; hence, up to 3.6 million bytes of storage are available.

MAGNETIC TAPE DRIVE: This Pertec unit operates at 12.5 inches/second and holds up to 1200 feet of 0.5-inch standard magnetic tape. It records or reads 7- or 9-track IBM-compatible formats at 800 bits/inch. A 9-track option at 1600 bits/inch is available. Parity can be odd or even for 7-track tape, and is odd for the other formats.

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➤ qualified for this market as well as for straight keypunch replacement.

Entrex's push into new market areas implies further product developments in the near future. One likely prospect is expansion of System 280 into a 16-station configuration, probably with additional software capabilities.

Entrex has fashioned its new shared-processor key-to-disk system by taking the DATA/SCOPE keystations and Nova-type minicomputer of System 480, retaining the Model 31 Diablo disk drive but organizing it for 1.8 million bytes of storage, scaling down the CRT display from 12 lines and 480 characters to 9 lines and 360 characters, incorporating a single 12.5-inches/second tape drive in place of as many as four 25-inches/second drives in System 480, reducing the number of record formats available at a keystation to four (eight optional), limiting record length to 280 characters and the maximum size of fields to 40 characters, and, above all else, selecting a subset of the System 480 software on the basis of most likely relevance to a low-volume installation. Another restriction is that keypunch- and typewriter-style keystations cannot be mixed on a single controller. Hence, the manager will have to settle on one or the other, depending on whether his labor source is typists new to data entry or experienced keypunch operators familiar with such procedures. The convenient worktable shown in the illustration is optional in System 280.

It follows that the operational character of the two systems is essentially alike. A particular keystation is converted to a supervisory role by the keying of a confidential pass-code. An operator has four (or eight) format programs that are sequenced automatically (chained) as keying of data proceeds. At the same time, data appears on the CRT screen, and the fields are tagged if desired. System status information and error messages appear in the two top lines. Batch balancing is performed, and progressively updated verify totals are maintained. There is field editing, check digit verification, range checking, error flagging, record searching, standard job filing, batch statistics, output record blocking, reformatting, and the customary standard operations such as dup, skip, record insert, and record delete. A not-so-customary but useful addition is constant data emitting. Through options, the 280 can also perform ascendancy checks, maintain operator statistics, and perform batch end editing.

These are powerful data entry manipulations for any system, large or small. It is natural to wonder what the differences are between the "large" Entrex 480 system and the "small" 280. Visual verification using the CRT display and limiting of standard verification to error-flagged fields and certain others, as designated by the format control program, are certainly the same in both systems.

To be sure, the restriction to a maximum of eight keystations is itself an important limitation of the Sys- ➤

➤ Rewind speed is 165 inches/second. Only one tape drive can be operated in System 280.

MODEL 5165 SERIAL PRINTER: Operates at 165 characters/second and prints 132 characters/line, 10 characters to the inch, 6 lines to the inch. It has a 63-character print set formed from a 5-by-7 dot matrix. The paper slewing rate is 24 inches/second. Paper width is 14-3/8 inches maximum.

MODEL 5300 LINE PRINTER: Prints 300 lines/minute, 132 characters/line, 10 characters to the inch, 6 lines to the inch. It has a 64-character print set. The paper slewing rate is 27.5 inches/second. Paper width can be from 3.5 to 19.5 inches.

OPERATING MODES

The operating modes are the same as those of System 480: Data Entry, Verify, Examine, and Record Format Entry. (For details, please see Report 70D-419-01.)

SYSTEM OUTPUT

System output is industry-compatible magnetic tape (see Magnetic Tape Drive). Although the magnetic tape code can be selected by the user, only one can be implemented by the system. Alternatively, the output can be transmitted directly to an IBM 360/370 computer center.

In some installations formatted data printed by the serial or line printers is regarded as system output when this material is promptly distributed to other departments. Examples are invoices, requisitions, personnel information, etc.

SYSTEM PROFILE

Storage capacities listed below assume a standard 1.8-million-byte installation and should be regarded as estimates of typical disk utilization. Utilization of resources varies, of course, according to application needs.

- Record length – can be up to 280 characters when formatted or optionally up to 2048 characters if reformatted before writing to tape.
- Record formats – 200 is representative, but if user wants to increase data storage space, the format library would be reduced. Each operator has access to four formats in standard operation, or up to eight optionally. A particular format can be used concurrently by any or all of the operators.

In addition, the system can store about 30,000 80-character records or about 20,000 120-character records. Library requirements vary in accordance with the selected options. Additional disk capacity is introduced as needed.

SOFTWARE

System operations, from formatting keyed data and generating the CRT display, through data editing and validation, to reformatting data records and writing blocked output to tape (including appropriate labels), are all performed under software control.

In addition to executing the normal keypunch operations, the 280 offers batch balancing, two check digit routines (modulo 7, 10, and 11, complemented and uncomplemented), and data emitting (entering of stored constants or constant fields) as standard features. Also standard are two batch accumulators, and two more are available as options. Another option permits up to seven check digit routines in all. Range checking is still another important option.

System 280 also performs such customary operations as skipping, duplication, right justification (optional), alpha ➤

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tem 280. The feasibility of operating two separate installations and thus doubling the keystation accommodation, however, should not be overlooked. Such operation would also allow combining of both styles of keyboards.

The System 280 is limited to 512-character blocks on the output tape, or 2048 optionally, whereas the 480 can write 4000-character blocks. The 280 has two conditional accumulators (four optionally), whereas the 480 has five. The 280 is limited to standard character and field checks, whereas the 480 can execute record-end edit programs. Table lookups are not available on the 280. Data sort and collating during reformatting for constructing new records cannot be performed by the 280. The ability to initiate a sequence of typical operations by keying a single code is available in the 480 but not in the 280; this feature is especially effective in high-volume applications.

As previously indicated, these differences come down to a matter of user emphasis. The 280 possesses many basic and advanced capabilities that should make it quite cost-effective in its intended application environment. Because both the format programs written by the user and the software supplied by Entrex are format-compatible with the System 480, upgrading to the more powerful system, when the occasion arises, should be reasonably straightforward.

Entrex has promised delivery of System 280 in the fourth quarter of 1973. At the time of publication the company expressed confidence that its second quarter, like the first, would be profitable, in contrast to losses in its prior years of operation. Some assurance of company stability is implied by this turnaround in earnings. More company information appears in the report on System 480. □

► only entry, numeric only entry, mandatory entry/complete fields, record insert, record delete, and field boundary checking.

Each keystation operator working on a batch has four record formats available, and these are sequenced manually or automatically (chained). Four additional formats are optionally available. The record length can vary to a maximum of 280 characters; each field within the records is limited to 40 characters. The field headings, or tags, can be displayed on the CRT ahead of the keyed data or omitted as desired. The format can specify fields that are subject to verification and fields that are to be bypassed. Mandatory reverification can be specified for corrected fields. Within any batch, record searching can be carried out in any mode by keying HELP and then keying the record number or search value. Field identifiers can also be keyed. Records containing overridden errors are flagged, and such records can subsequently be searched and automatically recovered for verification.

Before stored records are written to tape, they can be reformatted. Data emitting is also available for this purpose. The standard block length is 512 characters, but extended blocking up to 2048 characters is an option.

Additional options are the ability to enter data from magnetic tape, ascendancy checking, a batch end editor, and operator statistics. Software for a communications controller is also available.

SYSTEM OPERATION

Any one of the keystations can be converted to a supervisory station by entering a special code. The supervisor can now access any system information from the proces-

sor or disk file and display it on her screen. She can also cause such information to be printed. An important responsibility is the completion of standard record format forms, and either the supervisor or an operator can key these instructions into the system for storage on the disk. The operators, after receiving their daily assignments from the supervisor, call up the required jobs and henceforth confine their activities to keying and otherwise working on data.

Error control is conventional and is the same as in System 480.

COMMUNICATIONS: Remotely located keystations can transmit data to the processor over a half-duplex leased telephone line or the switched telephone network. Each keystation employs an Entrex-supplied modem and requires its own dedicated line during operation. Transmission occurs at the rate of 1200 bits/second. In addition, each 280 installation is capable of batch transmission under Binary Synchronous (BSC) protocol to an IBM System/360 or 370 computer or to a terminal also observing this protocol. Thus, a 280 installation can readily communicate with another System 280 or with a System 480. Examples of IBM terminals with which it communicates are the 2780, 3270, and the 3780.

PRICING

The Entrex System 280 can either be purchased or obtained under a one-, two-, three-, or five-year lease. Maintenance charges are included in the lease costs that follow, but a separate contract must be arranged for purchased items. Service is provided at normal rates during the user's prime shift; emergency service, however, incurs a surcharge. The indicated rentals and costs are based on a 3-year lease term.

Data Stations	Cost per Station	Monthly Rental	Purchase	Monthly Maint.
4	\$278/mo.	\$1,113	\$50,400	\$168
6	204/mo.	1,223	55,200	188
8	167/mo.	1,333	60,000	208

The basic control group included in the preceding figures comprises the minicomputer, the disk drive, and a 7- or 9-track tape transport. It rents for \$893/month and sells for \$40,800, with maintenance charges of \$128/month if purchased. If the tape drive is omitted in favor of a Bisynchronous Controller, the rental is \$767/month, the purchase price is \$35,040, and the monthly maintenance is \$110.

Each keypunch-style keystation rents for \$55/month, sells for \$2,400, and is maintained for \$10/month. Each typewriter-style keystation rents for \$59/month, sells for \$2,597, and is maintained for \$11/month. Other pricing information follows (3-year lease):

Device	Monthly Rental	Purchase	Monthly Maint.
4 Formats	\$ 28	\$ 1,200	\$ 5
Operator Statistics	46	2,000	7
Expanded Tape			
Handling	110	4,800	20
Batch Editor	220	9,600	40
1600 bpi	137	6,290	20
Additional Disk			
Drive	333	15,475	50
Serial Printer	182	8,500	20
Line Printer	554	27,000	50
Communications			
Controller 6201	195	8,750	33*
Remote Data Station			
Adapter	37	1,750	5

*When within 25 miles of an Entrex service center ■