



# IBM 3270 Information Display System





## Introduction



You have a computer. For many reasons you need to communicate with it. You need to extract information and update files, for instance. And you need to do it easily and quickly. With efficiency and economy. How can you do it? With the new IBM display system – that more than meets all of these demands with its outstanding functional capability.

The IBM 3270 Information Display System is a versatile family of keyboard display stations, fast printers, and control units, for handling a wide range of local or remote on-line information processing jobs. Large clusters – of up to 32 devices – can contain any mix of displays and printers to suit your exact requirements.

Among the display station highlights are:

**Large capacity – 1920 characters**

**Light Pen selection of data (even for remote version)**

**Extensive screen editing facilities**

**Economical use of communication lines**

**Program Function Keyboard**

**Fast-action, easy-to-use keyboard**

**Excellent clarity of displayed characters.**

Two fast printers within the 3270 system give you a choice of speeds:

**66 characters per second**

**40 characters per second.**

## Applications

The 3270 lets you rapidly look up information stored on the computer's files. You can then 'focus' on the items you want, and modify them if necessary to update the file. Or you can scan through the stored data page by page, just like flicking through a reference book. If you are updating variable data that is displayed among fixed data, the program-controlled formatting allows the fixed data to be skipped automatically, making the operation simpler and faster. And the CPU can display a system message even while the operator is keying in data.

Systems that run under OS (IBM's *Operating System*) can benefit from using the 3270 display as an operator control station – that is, as a man-machine interface. Here the light pen is especially useful. A display of system status tells the operator what he wants to know in a most convenient form – and if a decision is required from him, he informs the system with the light pen for instant response. Many systems would use several 3270s, located in key positions such as main control console, tape library, disk library, and in the DP Manager's office.

Where multiple key punches are used for data entry, the use of 3270s can substantially increase the key entry productivity; this results from buffered keying and the advantages of on-line editing. The keyboard design ensures that it responds accurately to keying from the fastest operators.

## Versatility

The modularity of the 3270 system and its capacity for large clusters of units combine to provide great flexibility in configuration. From single stand-alone displays to networks of hundreds of displays and printers, the 3270 can fulfil your present and future information needs.

One control unit accommodates as many as 32 devices – which may all be displays, or displays and printers in any combination. They can be attached locally to the CPU, or remotely through communication lines operating at 1200, 2400, or 4800 bits per second. The 3270 uses Binary Synchronous Communications (BSC) with the advantage that other BSC terminals can operate on the same communication line.

An unusual feature that makes the 3270 display a truly general-purpose device is the choice of three keyboards. Different key layouts (and functions) have been designed so that the three areas of file enquiry, operator console, and data entry are each handled with optimum efficiency. The pluggable and interchangeable keyboards may be moved up to 30 inches from the display to a position that suits the operator.

## Reliability

For systems that operate on-line, the highest possible reliability is essential. Computer technology is used in all the 3270 units. This in itself gives high reliability – but, in line with reliability, availability and serviceability (RAS) features included in all IBM System/370 equipment, the 3270 has built-in retry and error recovery procedures.

The control unit will retry any incorrect data transfer operations that occur between it and its attached displays and printers. The CPU will only be informed of an error condition if these recovery attempts fail. The physical design of the units allows easy access for maintenance and repair. This serviceability complements the reliability features to ensure high availability.

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## Wide Range of Functions

The 3270 displays are available with either 1920- or 480-character capacity. Excellent clarity is provided by the flicker-free characters displayed on the high-contrast screen.

Extensive screen-editing facilities enable the operator to change, insert and delete displayed data very easily. Changes may affect a single character, an entire line, all the variable data, or the complete screen. Typamatic keys permit fast movement of the cursor (position marker) and certain other editing functions. The increased sophistication of the display means that the operator does less work – and so achieves maximum performance for minimum effort.

Data is formatted on the screen by program control. This helps the operator to work faster because one type of data appears at the same screen location for every transaction. The displayed data is classified as *protected* or *variable*, the operator being able to change variable data only. The operator can obtain new formats from the CPU by depressing a pre-determined function key, or may key in the request from the

keyboard. Protected data can be automatically skipped so that the operator's keying rhythm is uninterrupted.

The Selector Light Pen can speed the man-to-machine communication by permitting the operator to select information merely by pointing to a specific item in a displayed list.

The operations initiated by *program function* keys are determined at the programming stage. The function keys allow the operator to perform quite complex operations at the touch of a button, and obtain rapid results from the CPU.



The operator efficiencies of the 3270 are complemented by its potential for reducing communication line costs. The number of characters transmitted between display and CPU is reduced to the minimum. For instance, formats used more than once will be made *protected* data, and will not be transmitted. Only the 'exception' or new data is sent down the line to the CPU. For these reasons the 3270 system minimises the number of lines necessary for a communications network as many terminals can be attached to each line and still give a fast response.

The 3270 has new powerful commands that further reduce line transmission time. For example, the whole screen can be restored to blanks by transmitting only one data character with appropriate control characters.

Through the use of Binary Synchronous Communications (BSC), the 3270 can share a single line control with other IBM BSC remote communication devices. Even if a wide variety of functions are required in a location that is remote from the central processor, those that use BSC transmission can be handled by one common line.

**For the Technical**

*Display capacities*

1920 characters – 24 rows of 80 characters.

480 characters – 12 rows of 40 characters.

*Screen editing facilities*

Cursor (position marker) can be rapidly positioned up, down, left or right.

*SKIP*, *BACK TAB* and *NEW LINE* are also 'typamatic' keys – automatically repeat on full key depression.

Erase keys can clear a field, the screen, or all unprotected data.

*INSERT* and *DELETE* operate by individual characters on the assigned field. Existing data automatically shifts to allow for the insertion or deletion.

*Selector Light Pen*

Allows simple and fast selection of single or multiple fields.

Available on remote as well as on local displays.

*'Field orientation'*

Data will be arranged on the screen as discrete fields. The characteristics of the data in each field will be recognised by the system as :

- protected or unprotected
- alphanumeric, or numeric only

– light pen detectable or not

– brightness normal, high intensity, or off (*No-Display* feature)

– whether the data has been modified or not.

*Protected data*

Information can be classified as *protected* and then cannot be altered or destroyed by the operator. Protected data is not transmitted unnecessarily when only the variable data needs to use line time.

*Data compacting*

Extra commands enable the minimum amount of data to be transmitted. Only a field that has already been singled out as *unprotected* and *modified* is 'ready' – but only the data up to the last modified character is sent.

*Audible alarm*

An optional audible alarm can be programmed to alert the operator when the last screen position but one is reached, or when some other operator intervention is required.

*Keyboard*

Key rates of up to 25 characters per second (per display) are readily accepted.

### *Printers*

Rated speeds :  
40 characters per second  
(IBM 3284)  
66 characters per second  
(IBM 3286)

Matrix printing.

132 print positions.

### *Cluster size per control unit*

32 displays, or 32 displays and  
printers in any combination.

### *BSC line speeds*

1200, 2400 or 4800 bits per  
second.

### *BSC line compatibility with*

IBM 2715 Transmission Control  
Unit

IBM 2770 Data Communication  
System

IBM 2780 Data Transmission  
Terminal

IBM 3735 Programmable  
Buffered Terminal  
and other BSC devices.

### *Keyboard versatility*

Three different keyboards are  
available for the areas of en-  
quiry, system control, and key  
entry. Keyboards are pluggable  
and can be changed in a  
moment.

### *Data security*

A key-operated security lock  
can be fitted on each display  
station.

A Non-Display feature allows  
the operator to key in a security  
number without its being dis-  
played. The CPU will check the  
code and open appropriate jobs  
and files.

### *Program support*

BTAM – Basic Telecommuni-  
cations Access Method, for  
users of both Operating System  
and Disk Operating System.

OS/DIDOCS – Device Inde-  
pendent Display Operator  
Console Support, for users of  
Operating System.

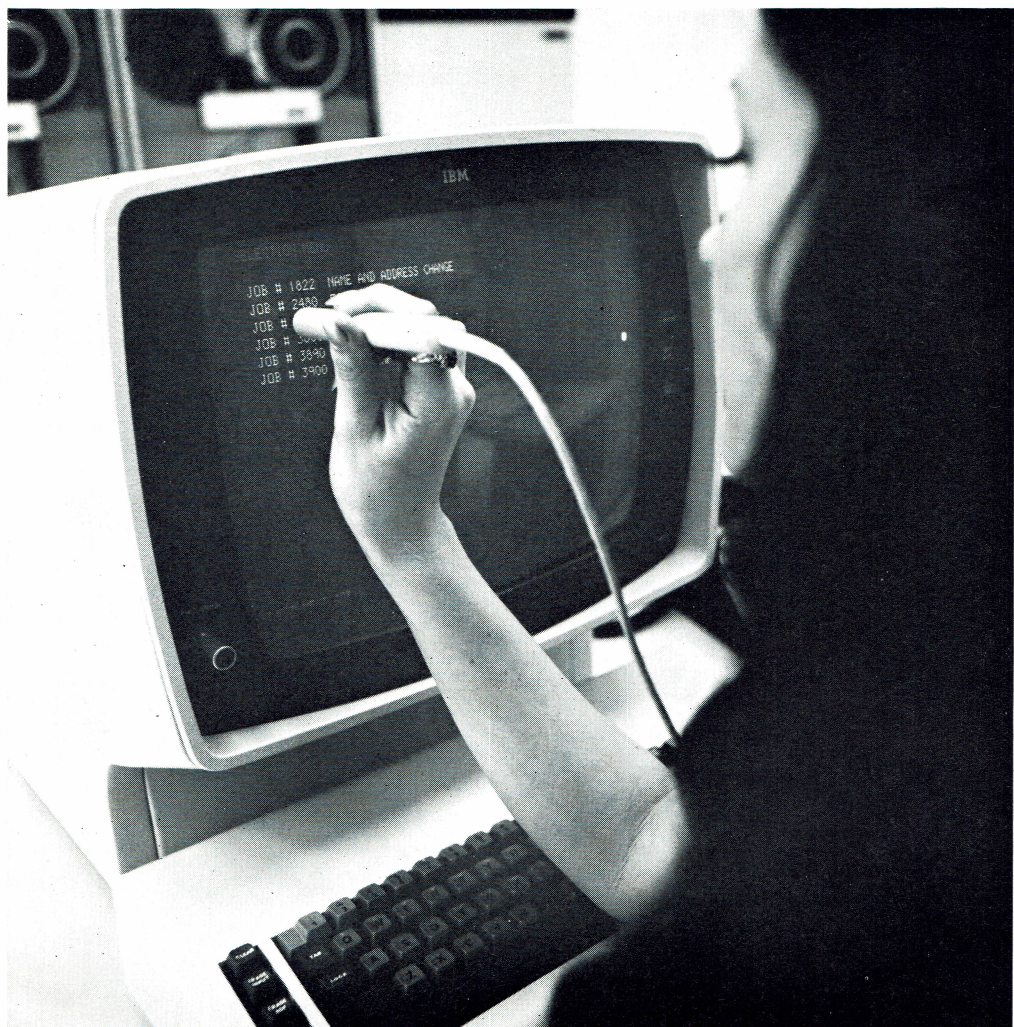
### *Physical characteristics*

Small control unit – no air-  
conditioning required.

Connection from control unit  
to display and printer by single  
co-axial cable, up to 2000 feet  
long.

Keyboard movable to 30 inches  
from the screen.

Easy access for maintenance.





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