SYSTEMS BOOK

Datapoint 2200

The Business Mini Computer

Datapoint 2200/Printer

Datapoint 2200/Tape

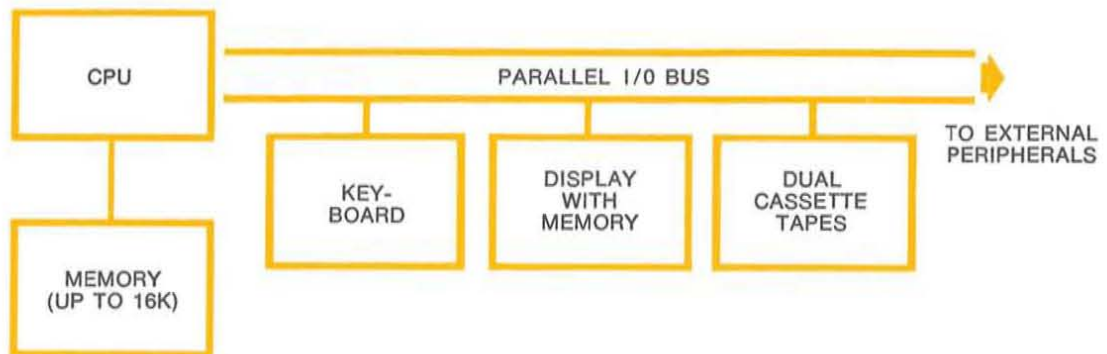**Datapoint 2200/Disc**

Datapoint 2200/Line Printer

Datapoint 2200

The complete
Business Mini Computer
System — featuring a full line of
peripherals, software and support
services, all available <u>now</u>.

*The Datapoint 2200 represents an uncommon achievement in
both computer engineering and computer applications. The first
system to integrate successfully a powerful general purpose
computer and a flexible data terminal in one typewriter-sized
unit, the 2200 has significantly broadened the range of
applications in which on-site computer power can play a
practical and cost/effective role, especially in the commercial
field. The complete range of peripherals available with the
Datapoint 2200 augments its usefulness as a stand-alone
computer system and at the same time allows its even more
effective use for remote job entry and related applications in a data
communications mode. Its ability to function well in either
independent or communications usage (or simultaneously)
distinguishes the Datapoint 2200 as a unique system
in the computer and computer peripherals field. This booklet
provides basic systems descriptions of the Datapoint 2200
and peripherals, and its usage both as computer
and as data terminal.*

Datapoint 2200 Systems Flow Diagram

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Source Data Entry

In any data processing operation, the first step must be to get the information into the data processing system. Whether this information, or data, is keypunched, transmitted by teletypewriter, or handwritten, it must be error-free and received on time to be of any value.

The DATAPOINT 2200 has been designed for rapid, error-free entry and storage of data.

To the user, the DATAPOINT appears and feels as familiar as an office typewriter. No special skills or training are required.

With a form presented to the user on the easy-to-read screen, she is instantly guided to input the required information. Key-in errors are quickly corrected by powerful keyboard editing techniques. This edit-and-correct-as-you-type ability gives the user great confidence and speed.

However, mistakes and oversights are bound to occur. A person will unthinkingly enter a "100" rather than a "10" and the error will never be trapped until the data has been processed.

The DATAPOINT's computing power can check each entry the user has made and determine if the data is reasonable. If not, an audible alarm can be sounded and the user requested to re-enter the data. No other data entry device offers this high degree of error-checking ability, independent of additional equipment.

Once the data has been approved by both the user and the DATAPOINT 2200, it is written as a record to the cassette tapes and the appropriate portions of the screen are erased for the next entry.

The operator has touched nothing but a keyboard, and yet has edited, verified and recorded the data, all under the silent supervision of the DATAPOINT 2200. Source data errors are virtually eliminated.

Datapoint 2200 Used in Data Conversion/Data Entry

DATAPOINT 2200
WITH 2K MEMORY

COMMUNICATIONS
ADAPTORS

DATAPOINT 2200/TAPE
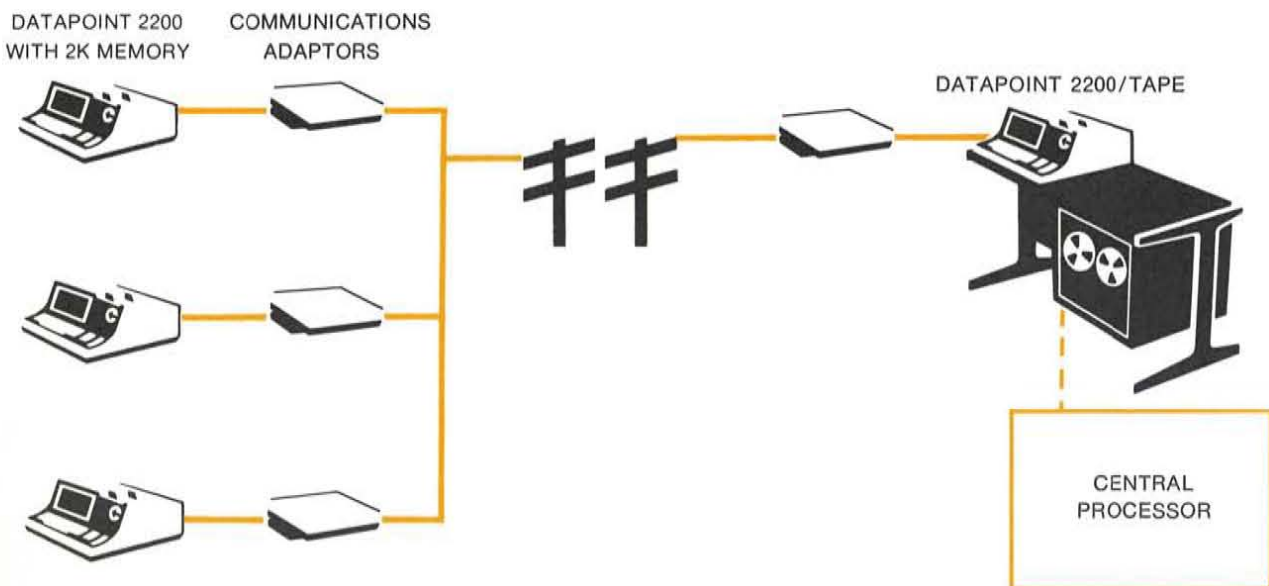
CENTRAL
PROCESSOR

& Communications

Communicating data to a central data processing center is one of the most costly and awkward problems in data processing today. The first step in solving this problem is to reduce the need to communicate data by moving as much of the processing to the source of the data as possible. With the DATAPOINT 2200 only the most essential and compact data need be transmitted. With the local computing power and storage capability of the DATAPOINT 2200, data need not be transmitted the instant it is entered but may be checked, processed and stored for transmission at a convenient time — without special attention by the user or operator.

Your existing central computer system need not be expanded to accommodate a data communications network — the DATAPOINT 2200 is designed to handle the entire job and deliver or receive data via industry compatible magnetic tape.

Your choice of communications methods is wide — either a private line or the public dialed telephone networks can be used to collect and distribute data between DATAPOINT 2200's. Whatever your choice, the system is completely automatic and does not even require a user to dial a telephone. Tight error control assures the integrity of all data transmitted.

If you already have an existing communications system, the DATAPOINT 2200 can be integrated into your existing network without changing your existing communications discipline or facility and at the same time provide substantial performance advantages over your present terminal devices.

Most important of all: The DATAPOINT 2200 software is ready to go! Through the facilities of the DATABUS language and the COMMUNICATOR software packages, your new DATAPOINT system can be up and running quickly.

In data entry applications the Datapoint 2200/Tape is utilized as a data concentrator prior to central computer processing.

Typical Source Data Entry Applications

A typical data collection system is configured around individual remote DATAPOINT 2200's with 2K of memory and operating under DATABUS 6 software. Each remote location would include one communications adaptor providing 1200 bit per second transmission capability over the Bell System dial network (DDD).

A single DATAPOINT 2200 with the same communications adaptor, 8K bytes of memory and a 9-track 2200/TAPE form a master station.

Using DATABUS 3 software, the master station serves as a communications controller calling each remote station and exchanging data automatically. This data is then formatted onto 9-track type and used by the data processing facility.

Generalized software for this system is available at no cost. Since the DATABUS high-level language is used, customized input formats can easily be generated by the user or by Computer Terminal Corporation Systems Engineers. Bell System direct access facilities are used, and no private lines or special engineering is required.

A Multi-Use Terminal

Many users have a requirement to use a variety of computing services either in time-sharing or remote-batch work. Generally, it has been necessary to have on hand a terminal of the type specified by the computer facility.

With the DATAPOINT 2200 and the appropriate communications accessory, one DATAPOINT can replace a variety of other terminals. The program in the terminal simulates or emulates the function and communications procedure of the original terminal.
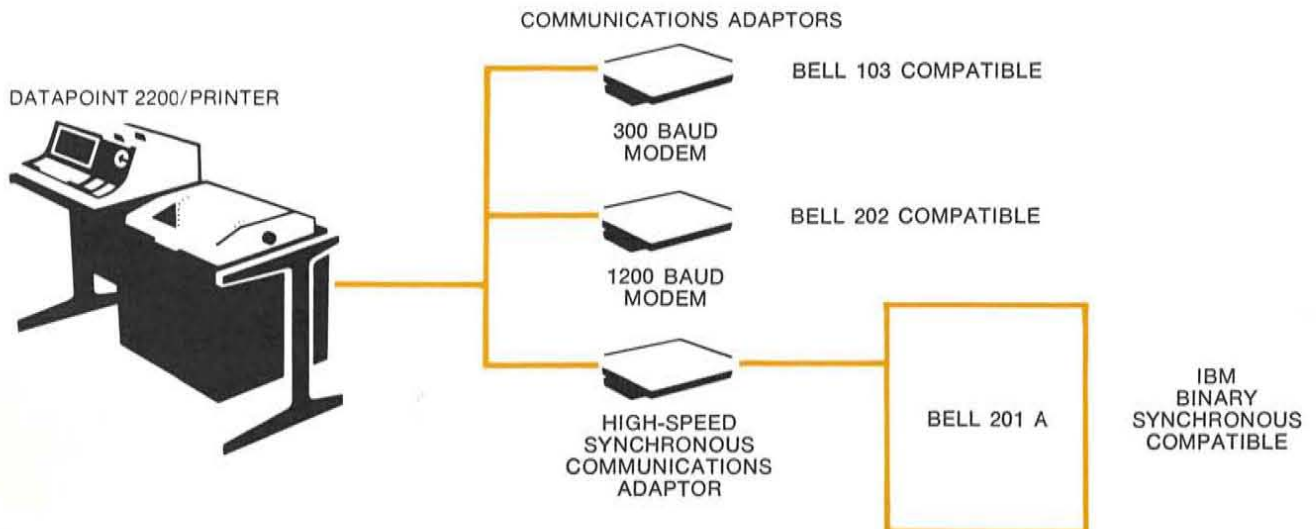
In the diagram above, a 2200 with 8K of memory has three communications adaptors, two of which contain internal modems. This combination allows 300 and 1200 baud asynchronous communications and 2400 baud and higher synchronous communications.

Typical terminal emulator packages available are:

IBM 2780	IBM 1050
IBM 2265	BURROUGHS TC500
IBM 2741	TELETYPES

Datapoint 2200 as a Multi-Use Terminal

DATAPOINT 2200/PRINTER

COMMUNICATIONS ADAPTORS

300 BAUD MODEM — BELL 103 COMPATIBLE

1200 BAUD MODEM — BELL 202 COMPATIBLE

HIGH-SPEED SYNCHRONOUS COMMUNICATIONS ADAPTOR — BELL 201 A — IBM BINARY SYNCHRONOUS COMPATIBLE
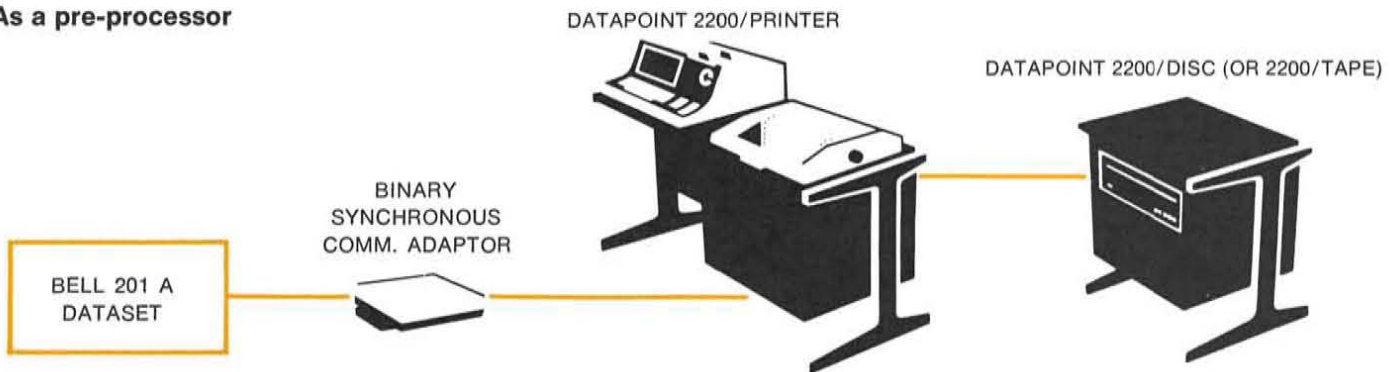
Remote Pre-Processing

The addition of either the DATAPOINT 2200 cartridge disc or industry compatible magnetic tape units provides the capability for creating and maintaining large data files at remote locations. The files may then be used to provide "hard" validation of source data entries, and, additionally, processed to provide local job and essential source documents control reports that would otherwise be obtainable only from the central computing facility. DATABUS, the 2200 high-level language, is ideally suited for quickly programming local job control applications.

The complete complement of DATAPOINT 2200 Communications Adaptors, with extensive supporting software for the commonly used disciplines, allows the remote station to communicate only that data required by the main CPU facility to be transferred.

As a pre-processor

DATAPOINT 2200/PRINTER

DATAPOINT 2200/DISC (OR 2200/TAPE)

BINARY
SYNCHRONOUS
COMM. ADAPTOR

BELL 201 A
DATASET

Instrumentation Interface

Systems involving monitoring or acquisition of data, such as in the electrical and process industries, are being configured with a small computer. The computer can accept data from a variety of devices, convert it to the desired format and record it on tape. Besides the recording function, the program may check the incoming data for reasonability and signal an audio alarm if the data has gone out of bounds.

Both the screen and the printer may be used for logging, trending and status up-date.

The Parallel Interface offers great electrical flexibility and will provide a straightforward connection to a wide variety of instrumentation. For instances requiring more than one instrument, the DATAPOINT 2200 will accommodate up to 14 Parallel Interfaces.
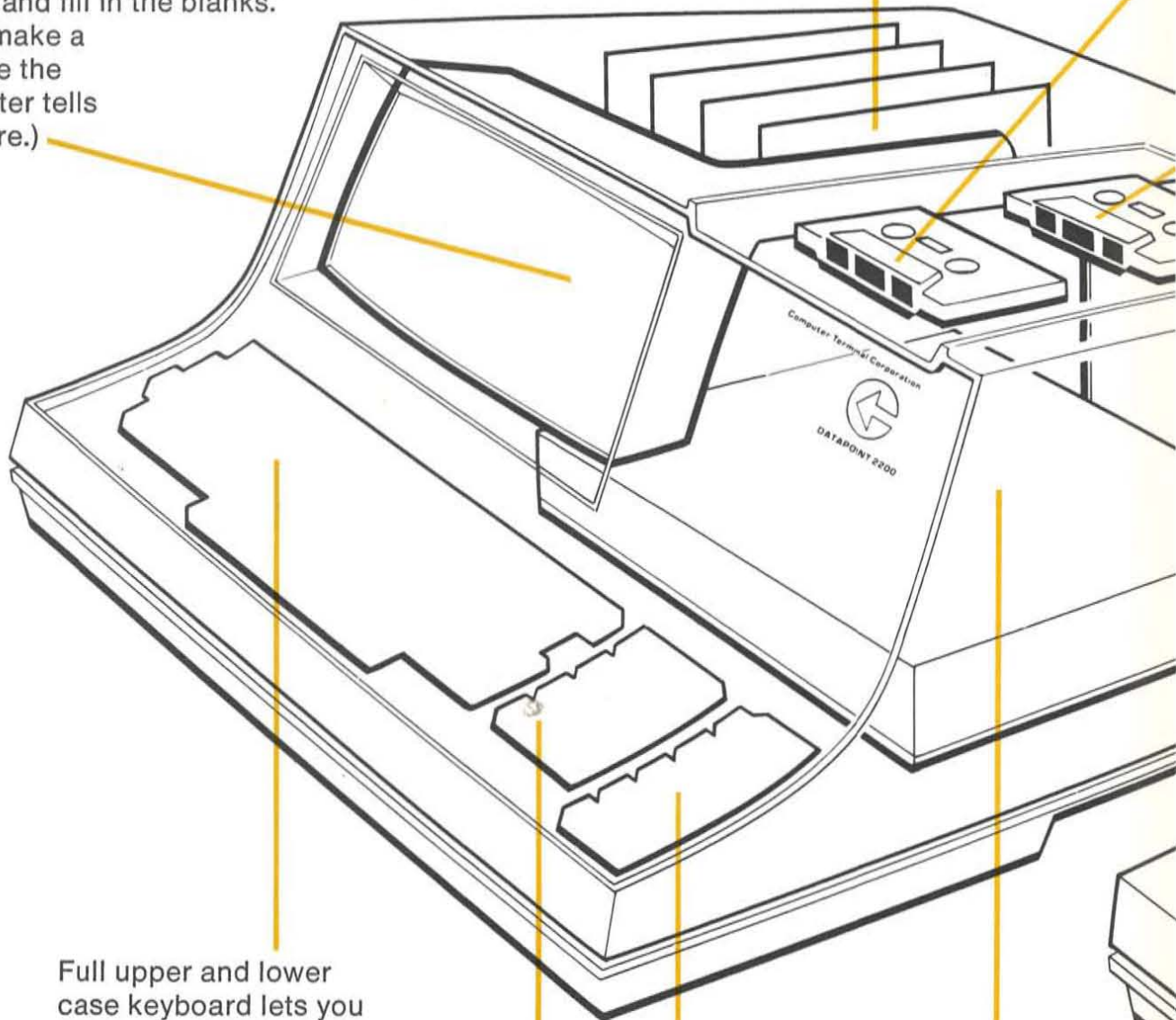
As instrumentation interface

DATAPOINT 2200/PRINTER

USERS
INSTRUMENTATION
SYSTEM

DATAPOINT
PARALLEL
INTERFACE
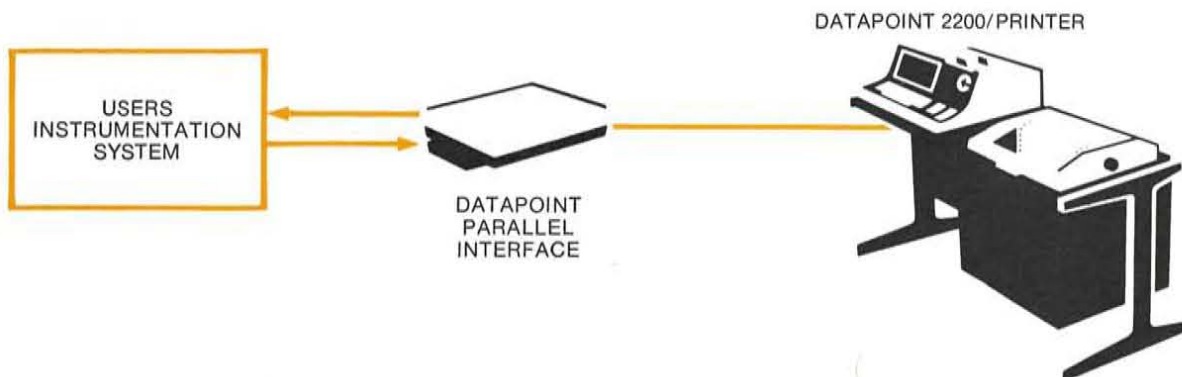
Modular memory (from 2K to 16K).

960 character display — lets you see what you're doing. (For data entry, display your format and fill in the blanks. If you make a mistake the computer tells you here.)

Computer Terminal Corporation

DATAPOINT 2200

Full upper and lower case keyboard lets you talk to the DATAPOINT or someone else's computer. (The DATAPOINT 2200 is also a great computer terminal.)

10 key number pad.

General purpose fully programmable computer.

5 function keys (that's all you need).

TAPOINT 2200

Cassette #1 records all the information.
Data can go from here directly to an IBM
computer magnetic tape, bypassing
punchcards altogether.

Cassette #2 programs the DATAPOINT's computer
and works back and forth with cassette #1.
(When you're done with one job, load another
program and you're ready to go again.)

Built-in power supply.

To other
peripherals.

Communications adaptor
(processor controlled
with a built-in modem)
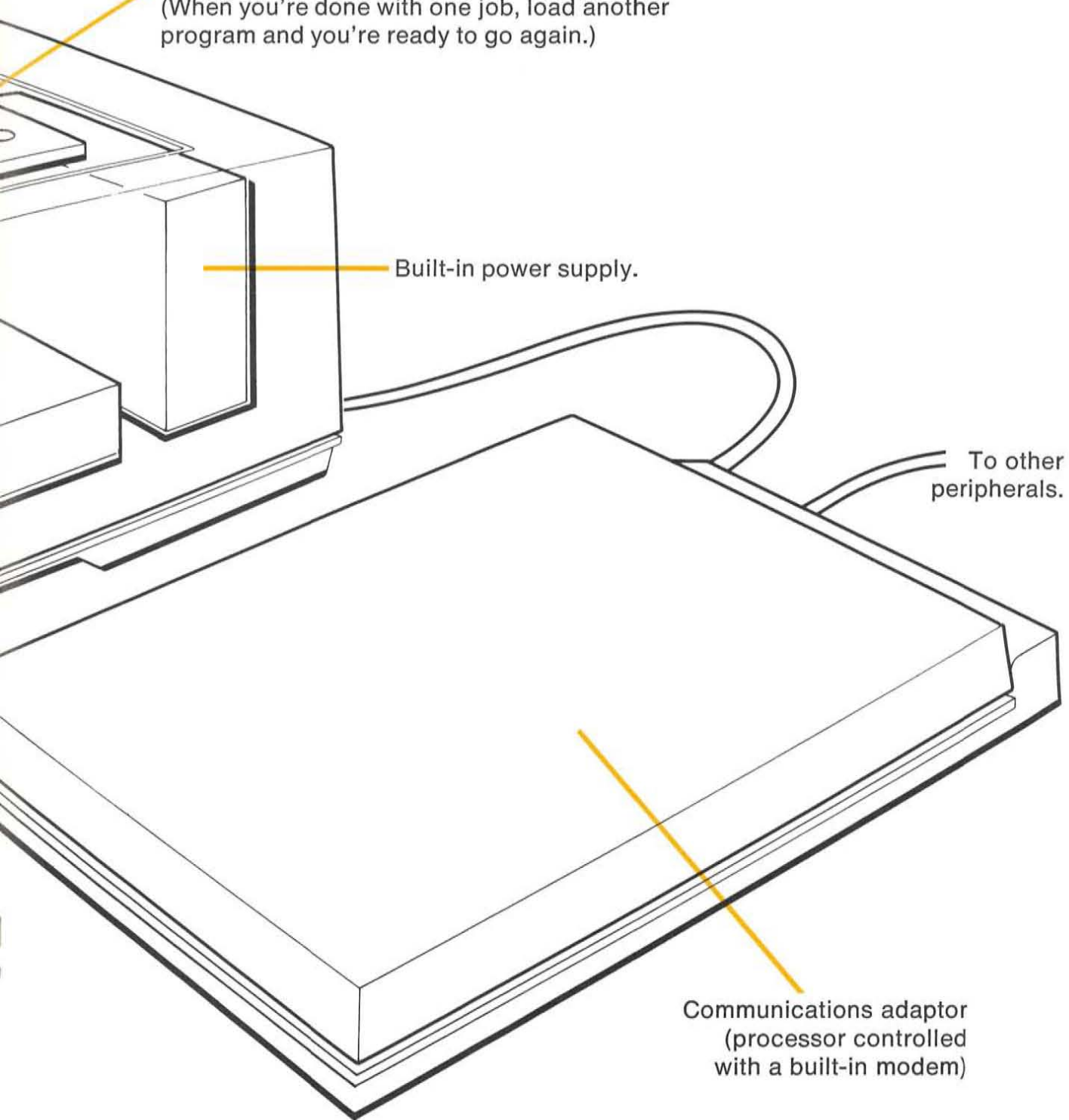
Hardware & Peripheral Descriptions

THE DATAPOINT 2200

The heart of the DATAPOINT system is the DATAPOINT 2200. The size of an office typewriter, it provides a computer and memory, a keyboard and CRT display, and a dual cassette tape deck. It is available in both high and low speed memory versions with a memory size between 2K and 16K bytes.

2200/COMMUNICATIONS ADAPTORS

The communications adaptors provide channels to the outside world. Six basic models are available:

1.) An asynchronous full-duplex adaptor (RS-232) providing an industry standard interface to non-DATAPOINT modems and peripherals. The data rate is programmable from 37.5 to 19,200 bits per second.

2.) An asynchronous full-duplex adaptor (including modem) for connection to leased or public dial network lines, fully compatible with Bell System 103-type data sets. Data rates are programmable from 37.5 to over 300 bits per second.

3.) An asynchronous full-duplex adaptor (including modem) for connection to leased or public dial network lines, fully compatible with Bell System 202-type data sets. Data rates are programmable from 37.5 to 1800 bits per second. Program controlled dial-up and auto-answer built in.

4.) An asynchronous full or half-duplex adaptor for interface to standard neutral or polar telegraph circuits. Data rates programmable over the range of standard telegraph speeds.

5.) A synchronous "Bisync" adaptor for use with standard ASCII or EBCDIC codes. Connects directly to a Bell System 201-type data set. The data rate matches the range used by currently available synchronous data sets.

6.) A 16-bit full-duplex parallel adaptor for interfacing a wide variety of non-DATAPOINT peripheral devices.

DATAPOINT 2200/PRINTER

This serial printer provides a full 132 column printout on standard tab stock. Printing is impact and permits multiple copies at speeds of 30 characters per second.

The printer is housed in a free-standing cabinet or console with a space for the DATAPOINT 2200 to the left, forming a neat package for moderate speed printing requirements.

DATAPOINT 2200/LINE PRINTER

For applications requiring a high volume of printing, the 2200/LINE PRINTER provides a 135-line per minute capability.

Printing technique is matrix impact permitting multiple copies and is available in a free-standing console. The DATAPOINT

line printer supplies the DATAPOINT system user without printout on standard 132 column tab at speeds compatible with high-speed data channels.

DATAPOINT 2200/TAPE

This industry compatible tape transport is available for either 7-track or 9-track magnetic tape. It accepts up to 8½" reels and

provides all standard read/write and file operations with automatic error checking. Available in either a console mounting or a separate free-standing cabinet.

DATAPOINT 2200/DISC

Bulk storage of data with rapid retrieval is gained with this single-cartridge disc. Each cartridge contains nearly 2.5 million

bytes of data. The Controller for the disc is contained in the same console.

The disc connects directly to the 2200 and is available in a variety of configurations with both console and free-standing cabinets.

DATAPOINT 2200/ACCESSORIES

Individual consoles, stands, copy holders, rack cabinets, etc., are available to aid the user in implementing a DATAPOINT 2200 system.

DATAPOINT 2200/SUPPLIES

Coding pads, tape cassettes, printing paper, tape labels, ribbon, and all other essentials are stocked with easy availability.

The Datapoint 2200/Disc provides 2.4 million bytes (8-bit bytes) of memory capacity in removable disc cartridges.

Software

A complete range of software is available for the DATAPOINT 2200. These packages provide the user with the basic and advanced tools to create and implement an application program tailored exactly for the task at hand.

THE DATABUS LANGUAGE

DATABUS is a high-level programming language designed expressly for the DATAPOINT 2200 that allows the user to quickly create a business data processing program.

Programmers experienced with COBOL, RPG, or FORTRAN will soon feel at home with DATABUS. The string-oriented language has a remarkably straight-forward structure, and most business applications are efficiently implemented with a minimum of programming.

DATABUS is an interpretive language with an extensive command and input/output structure. You can write programs to do data processing jobs in DATABUS in the same manner as any other high-level language.

Since all 2200's contain a keyboard, display screen and cassette decks, DATABUS was written to take full advantage of this. If a message is to be displayed upon the screen, the command would be DISPLAY MESSAGE. What could be easier?

The power doesn't end there. Full arithmetic capability can be called upon and two versions of the language have extensive string-handling power.

With the DATABUS language, you can build data files without complex schemes. Even communications routines with error-checking can be written with little effort.

DATABUS 1

This version of the language requires a minimum memory size of 8K bytes. it is the simplest form of the language for stand-alone processing and data capture applications.

It includes keyboard, display, tape cassette and printer input/output facilities and the entire range of string arithmetic capability.

DATABUS 2

Also requiring a minimum of 8K bytes of memory, DATABUS 2 includes all of the capability of DATABUS 1 plus additional powerful string-handling and index facilities. The additional capability is achieved at the price of a small reduction of possible program size.

DATABUS 3

DATABUS 3 is a version of the language intended to implement communications programs. While it retains the string-handling facilities of other versions of DATABUS, it also provides a means through simple instructions to handle complex communications functions such as originating and answering automatically dialed data calls, automatic polling of multipoint DATAPOINT networks, and sending and receiving data between DATAPOINT 2200's with complete error control.

DATABUS 3 requires a minimum of 8K of memory and supports the keyboard, display, printer, tape cassette, 9-track industry compatible magnetic tape, and Bell 202 compatible communications.

DATABUS 4

DATABUS 4 is a simplified version of DATABUS 2. It contains the string-handling instructions but restricts the arithmetic and printer capability in order to reduce the minimum memory requirement to only 4K bytes. Its principal application is low cost key-to-tape data capture.

DATABUS 5

This version of the language is a companion to DATABUS 4 and provides for

communications without the extensive string-handling instructions. Its principal application is low cost communication and printing of tapes created under DATABUS 4.

DATABUS 6

DATABUS 6 is the simplest and most remarkable of the DATABUS family. Designed to be programmed by the operator (not programmer), it provides features of powerful buffered key punch and automatic batch communication.

Divided into six callable overlays of memory (only 2K bytes required!), includes facilities for program "cards," editing (inserting and deleting) "cards" on tape cassette, verifying previously input data and communications. (Send and receive tape cassette files with full error control.)

Tapes created under DATABUS 6 are fully compatible with other versions of DATABUS (including the communications converters such as the DATABUS 2780).

THE COMMUNICATORS

Many applications of the DATAPOINT 2200 require communications with existing facilities already supporting remote terminals

and computers. This interface is supplied in the DATAPOINT 2200 system through software packages called "COMMUNICATORS." These provide two-way data transmission between the DATABUS format tape cassettes and many widely-used communications disciplines.

The communications disciplines of the following list of terminal devices are some of the communications available or soon to be released:

    IBM 2770/2780
    IBM 1050
    IBM 2740/2741
    UNIVAC DCT-2000/1004
    CONTROL DATA 200 USER TERMINAL
    TELETYPE (5-level and 8-level)

ASSEMBLY LANGUAGE

An assembly language, the language of the computer's basic logical operations, is preferred by many programmers. Available software for the 2200 includes an Editor, Assembler, Debugger and a wide range of utility routines.

The Assembler provides rapid assembly of machine language with print-outs of the source code available on any DATAPOINT

The Datapoint 2200 — a unique combination of general purpose computer and data communication terminal system.

printer. Assembly can be done as soon as editing has been completed — no tape changes are required. The process results in a source/object code tape which may be run or re-edited.

Utility routines form an important part of a programmer's library and plenty of these are available now, with the list constantly expanding. A sampling:

Formatted file listers
Self-emulating debuggers
Core-dumps
Core-to-core image loadable file dumps
File fixers
String arithmetic packages
Floating point arithmetic packages
Transcendental function arithmetic package

THE OPERATING SYSTEMS

All software used in the DATAPOINT 2200 operates under the control of a master program called an Operating System. Three Operating Systems are currently used with the 2200:

Cassette Tape Operating System (CTOS) — provides full file and program support with the two tape cassette decks;

Magnetic Tape Operating System (MTOS) — provides full file and program support with the 9-track 2200/Tape;

Disc Operating System (DOS) — provides full file and program support with the 2200/DISC.

User Training

With any computer, the performance can be only as good as the software, and the DATAPOINT 2200 is no exception. A user who intends to expand and augment his 2200 system needs a staff trained and up-to-date on DATAPOINT programming concepts.

The Training Department of CTC offers monthly classes in Assembly and DATABUS programming, with training being constantly expanded to cover new developments in peripherals and communications devices. Classes are conducted in a modern training center with separate lecture rooms and programming labs. Each student has almost unlimited access to a DATAPOINT 2200 and Printer for his classwork.

Scheduled classes are held in the Training Facility on the grounds of beautiful Hemisfair Plaza across the street from San Antonio's famed River Walk.

For users needing to train an entire department or a group of users wishing to learn simultaneously, remote, on-site training can be scheduled in their own facilities.

Maintenance training for those who wish to service their own DATAPOINT equipment is also available.

Systems Support

Although thorough training gives a user a certain degree of independence, there are always times when systems configuration or programming help would be welcome. To fill this requirement, CTC employs Systems Engineers to aid users over the hurdles of operating a system.

Located in most major cities, the Systems Engineers have both extensive hardware and software backgrounds and can be relied upon for help with both pre-installation and operating problems.

Field Service

The Company's own Field Service Department employs, nationwide, a large number of highly-trained, experienced technicians backed by a support staff in San Antonio. Parts are field stocked for ready availability, and a user need only call for prompt attention.

ANAHEIM, CALIF.	714/534-9595
ATLANTA, GA.	404/631-0806
BOSTON, MASS.	617/267-0822
BUFFALO, N.Y.	716/856-7686
CEDAR RAPIDS, IOWA	319/393-5036
CHICAGO, ILL.	312/671-5310
CLEVELAND, OHIO	216/751-3339
DALLAS, TEX.	214/528-7920
DENVER, COLO.	303/244-5115
DETROIT, MICH.	313/354-1775
HOUSTON, TEX.	713/623-2433
KANSAS CITY, KANS.	816/471-6828
LOS ANGELES, CALIF.	213/487-6750
MILWAUKEE, WISC.	414/251-4928
MINNEAPOLIS, MINN.	612/771-4926
NASHUA, N.H.	617/267-0822
NEW YORK, N.Y.	212/759-4656
ORLANDO, FLA.	305/831-1370
PHILADELPHIA, PA.	215/825-2332
PITTSBURGH, PA.	412/391-2290
SAN ANTONIO, TEX.	512/696-4520
SAN FRANCISCO, CALIF.	415/341-9672
SEATTLE, WASH.	206/854-4798
WASHINGTON, D.C.	703/524-0420

lots of cheap printers

For further information on the Datapoint 2200 in any of its
configurations, please write or call the Computer Terminal
Corporation office nearest you.

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Los Angeles/(213) 645-5400
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