

PHILIPS

Philips Data Systems' product range
April 1971

IG Computer Systems - Apeldoorn

2.0

The home of the P1000 series of computers. From a small beginning in 1963, it has expanded to its present size as the most important factory in the area.

Products include both hardware and software, and are featured on the pages that follow immediately. Sales offices in:

NV Philips-Electrologica
Anspachlaan 1,
1000 Brussel, **Belgium.**

Philips-Electrologica A/S
Prags Boulevard 80,
2300 København S, **Denmark.**

Philips
Division Ordinateurs,
5, Square Max Hymans,
75, Paris 15e, **France.**

Philips Electrologica GmbH
Geschäftsbereich Computer-Systeme,
Liesegangstrasse 15,
4 Düsseldorf, Western **Germany.**

Philips S.P.A.
Divisione Sistemi
Viale Fulvio Testi, 327
20162 Milano, **Italy.**

Philips-Electrologica Nederland NV,
De Horst 4 (Postbus 2408),
Den Haag — Mariahoeve
The Netherlands.

Svenska AB Philips
Data Systems
Fack
183 03 Taby 3, **Sweden.**

PhilipsAG
Edenstrasse 20,
8027 Zürich, **Switzerland.**



IG Small Computers - Fontenay-aux-Roses

This is the white building at Fontenay-aux-Roses, near Paris, where Philips small computers are made. There are five departments: hardware, software, logic, electronics and computer-aided design.

The rest of this book is devoted to small computers and their peripherals.
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Prags Boulevard 80,
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75, Paris 15e, **France.**

Philips Electrologica GmbH
Geschäftsbereich Computer-Systeme,
Liesegangstrasse 15,
4 Düsseldorf, Western **Germany.**

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The Netherlands.

Svenska AB Philips
Data Systems
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183 03 Taby 3, **Sweden.**

Philips AG
Edenstrasse 20,
8027 Zürich, **Switzerland.**



IG Data Information Services

4.0

From the headquarters of the Industry Group Data Information Services, management activates, coordinates and controls the activities of the Philips Data Centres. Together with its organisations in the different countries contineously plans are developed for Data Centres in the key areas in Europe. The address of the headquarters is:

IG Data Information Services
P.C. Hoofllaan 2, Eindhoven,
The Netherlands
Phone: 040-60000 ext. 6040



IG Peripheral Equipment- Rijswijk

This is the headquarters of Industry Group Peripheral Equipment, at Rijswijk, near The Hague. Products include a complete range of punched tape equipment, disc stores, printing devices and data collection/preparation/video display sub-systems. The I.G. has development and manufacturing units in The Hague, Bremen, Crawley and Stockholm. Sales offices (OEM/End User) and customer engineering in:

Belgium:
S.A. Philips-Electrologica
1, Bd. Anspach
1000-Brussels
Phone:02-191800

Denmark:
Philips-Electrologica A/S
Prags Boulevard 80
2300 — Copenhagen S.
Phone:(0127)ASta 2222

France:
S.A. Philips Industrielle et Commerciale,
Division Peripheriques
5, Square Max Hymans
75 —Paris 15e
Phone:01 —7347759

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Philips Electrologica G.m.b.H.
Mintropstrasse 14-18
4000 — Düsseldorf
Phone:0211 —356021

Holland:
N.V. Philips-Electrologica
Industrial Group Peripheral Equipment,
Bordewijkstraat 4
Rijswijk —(Z.H.)
Phone:070-906720

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Philips S.p.A.
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201 24 — Milan, Phone: 2 — 6994

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Mass Core Store Modules

The core store capacity of P1200 and P1400 computers can be augmented by add-on modules of 0,5M and 2M octads, up to a maximum of 14M (1M = 1,048,576 octads).

The power of a computer can be greatly increased by adding more core store. This way, the user can have a great deal of fast storage at a relatively modest price. These add-on modules are slightly slower than internal core store, but

much faster than any other form of auxiliary storage.

Cycle time is 2.5 microsec, against 1 microsec for internal store.



The P1000 Doublé Configuration

2.1

This combines the power of the P1100 with that of the P1400.

At the rear of the picture (left to right) are the P1400, magnetic disc and magnetic tape units. At centre, a line printer, card punch and card reader. Right foreground: tape reader and punch. The man on the left is sitting at the P1400 operator's typewriter.



P1011 Card Reader and P1015 Card Punch

2.6

The P1011 Card Reader is an on-line device that can read 80-column punched cards at 800 cards/min, or 51 - column cards at 1000 cards/min. Two other versions, the P1010 and P1012, read at 400 and 1500 cards/min respectively. On the P1012, cards that are not read successfully are sorted out into a separate stacker.

Two other versions, the P1010 and P1012, read at 400 and 1500 cards/min respectively.

The P1015 Card Punch can punch data onto 80-column cards at 100 cards/min. Mispunched cards are automatically sorted out.

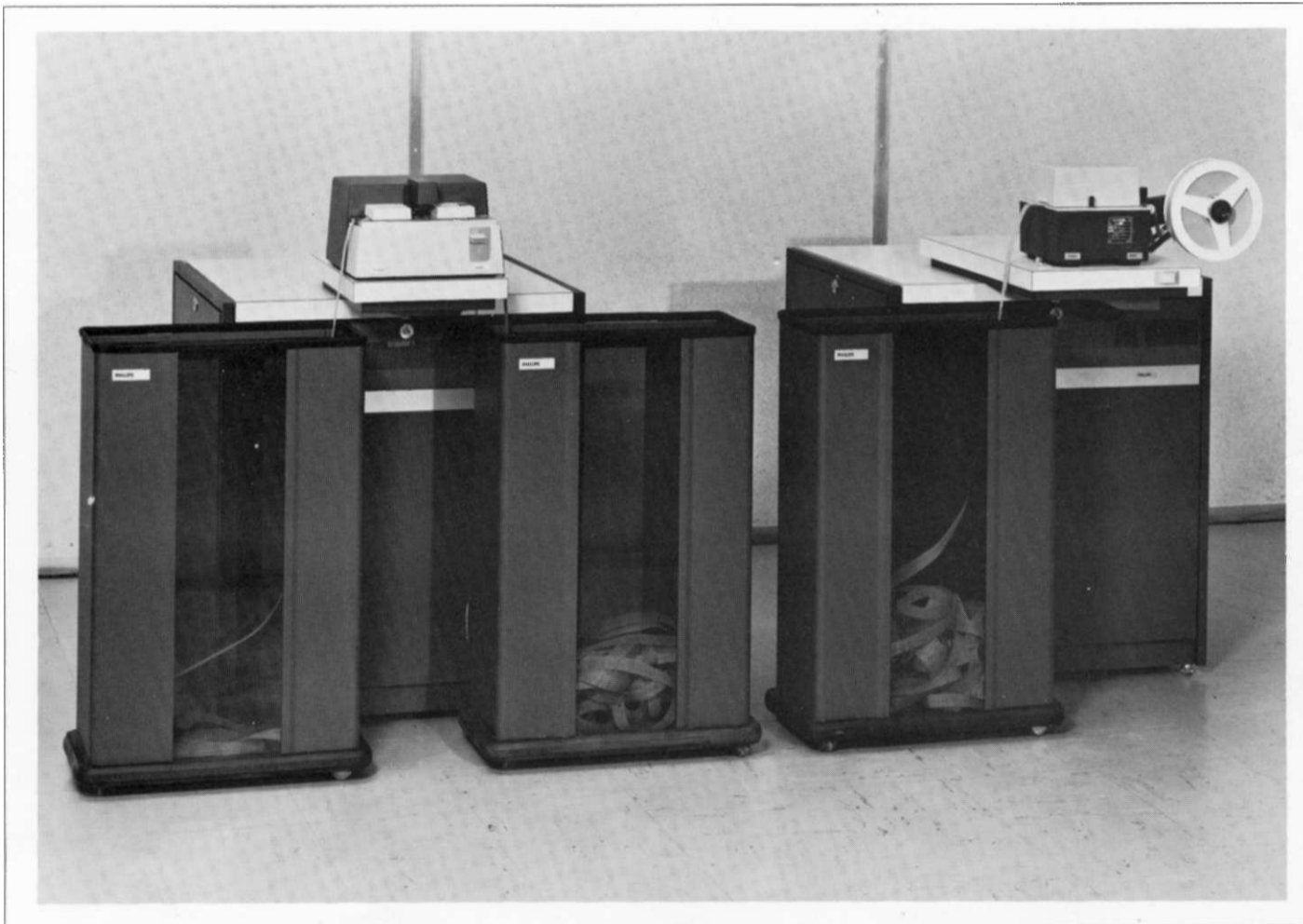


P1020 Punched Tape Reader, PI 025 Tape Punch

2.7

The P1020 Tape Reader can read punched tape at speeds up to 1000 characters/sec. Standard tape widths of 1 in, 7/8in and 11/16in can be used and reading can be stopped at preselected places.

The P1025 Tape Punch works at 150 characters/min and uses Standard tape widths of 1 in, 7/8in and 11/16in: punching can be stopped at preselected points.



The P1030 Line Printer

This machine is offered in three models, for printing at 330, 500 and 1000 lines/min.

- maximum paper speed: 35 inches/sec
- Paper width:
max. 48.3cm
min. 11.4cm
- Up to 5 neat, readable copies
- One method of paper transport is with a punched tape loop, which controls the spacing of the print-out to fit the preprinted stationery in use.



The P1035 Plotter

2.9

This device plots output from the P1000. Digital signals cause a plotting pen and a plotting drum to move in steps, thus drawing a graph. Two models are offered, giving plotting widths of 11 in (28cm) and 29.5in (75cm).

- Speed: 300 imprints/second
- Plotter steps: 0.01 Oin, 0.005in or 0.1 mm available on both models



P1040 Disc Control Unit, P1041 Disc Units

2.10

The P1041 Disc Unit has interchangeable disc packs with 10 recording surfaces per pack: total 7.25M octads.

The P1040 is the associated control unit: each one can handle up to eight disc units.



P1044 Disc Control Unit, P1045 Disc Units

2.11

The P1045 Dual Drive Disc Unit can store up to 60M octads of data. The disc packs are independent, so that one can be searched while the other is being read or written on.

- Read/write speed 312,000 octads/second
- Average random positioning time: 65 milliseconds

The P1044 Control Unit controls up to four P1045 Disc Units.

For configurations with only one or two discs, the P1048 Control Unit can be used.



P1060 series Tape Units and Tape Control Units

2.12

Tape units and control units are available in both the phase modulation and non-return-to-zero (NRZ) modes.

NRZ Types

NRZ tape units are offered in three speeds: 37.5; 75; 112.5 inches/second, recording at 800 bits to the inch on Standard 9-track tape.

Optionally, triple-density reading/writing is possible: 200; 556; 800 bits per inch on 7-track tape.

Phase Modulation Types

These are available in speeds of 75 and 112.5 inches/second, recording at 1600 bits to the inch on 9-track tape.

It is also possible to connect NRZ-type drives to a PM control unit with the aid of the NRZ feature. Triple density as above is then available with 7-track tapes.



The P1075 Central Machine

2.

This is the 'Business P1000': the smallest member of the series. The P1075 offers the medium size business all the advantages of a modern, fast third-generation computer at a modest price.

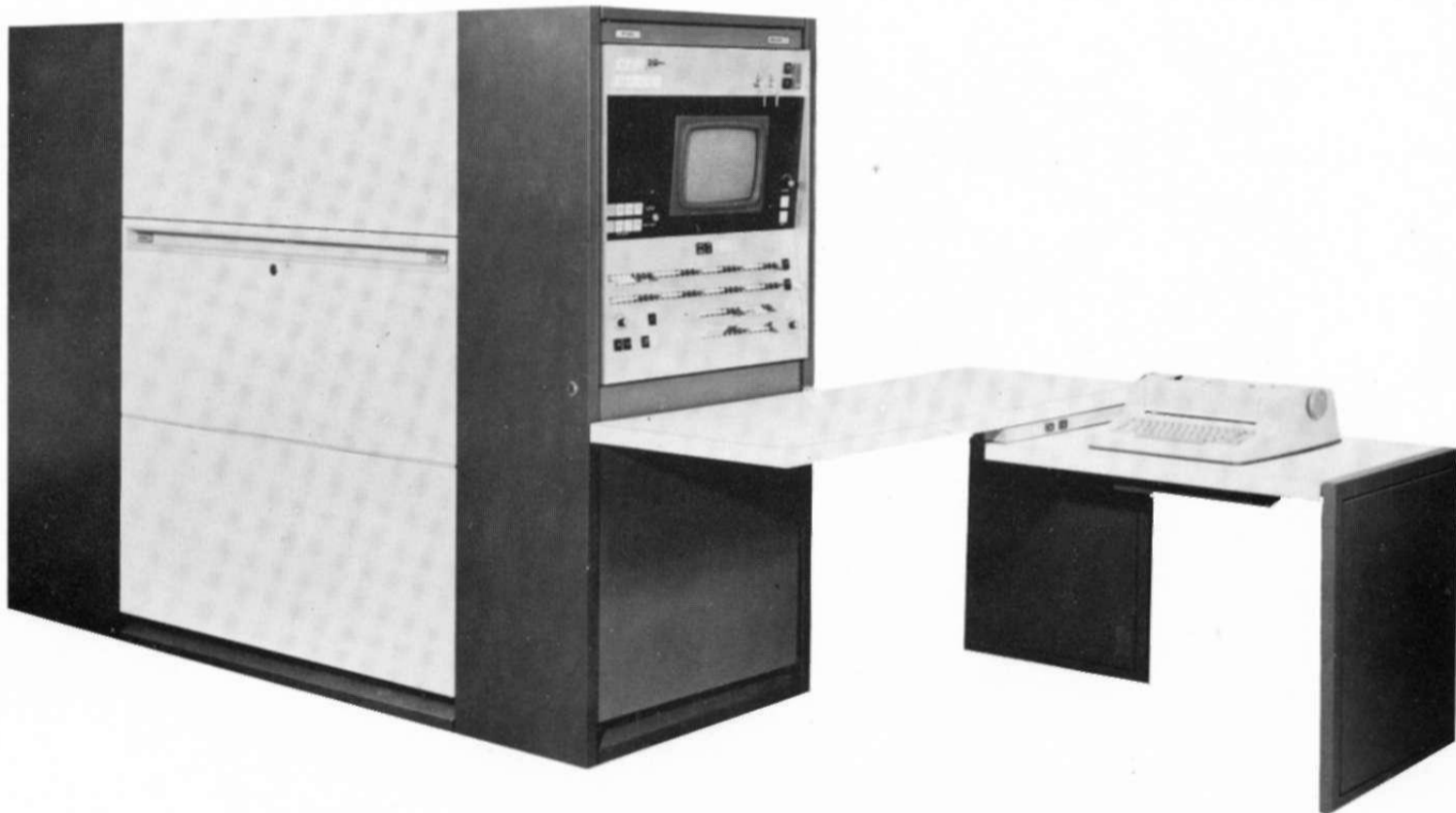
Smallest core store is 16k octads: the three bigger models are offered with stores of 32k, 48k or 64k. Internal data path is one octad: cycle time is only one microsecond. For applications needing extra large, quick-access information

store, up to 480 million octads of disc storage can be attached. Autocode and RUG are available on all machines. Even COBOL is possible on all except the 16k model.

These languages, plus the potential storage area, make a wide range of applications possible. These include business uses like banking, stock control and ticket reservation systems; information retrieval uses such as newspaper libraries and hospital or

local government administration.

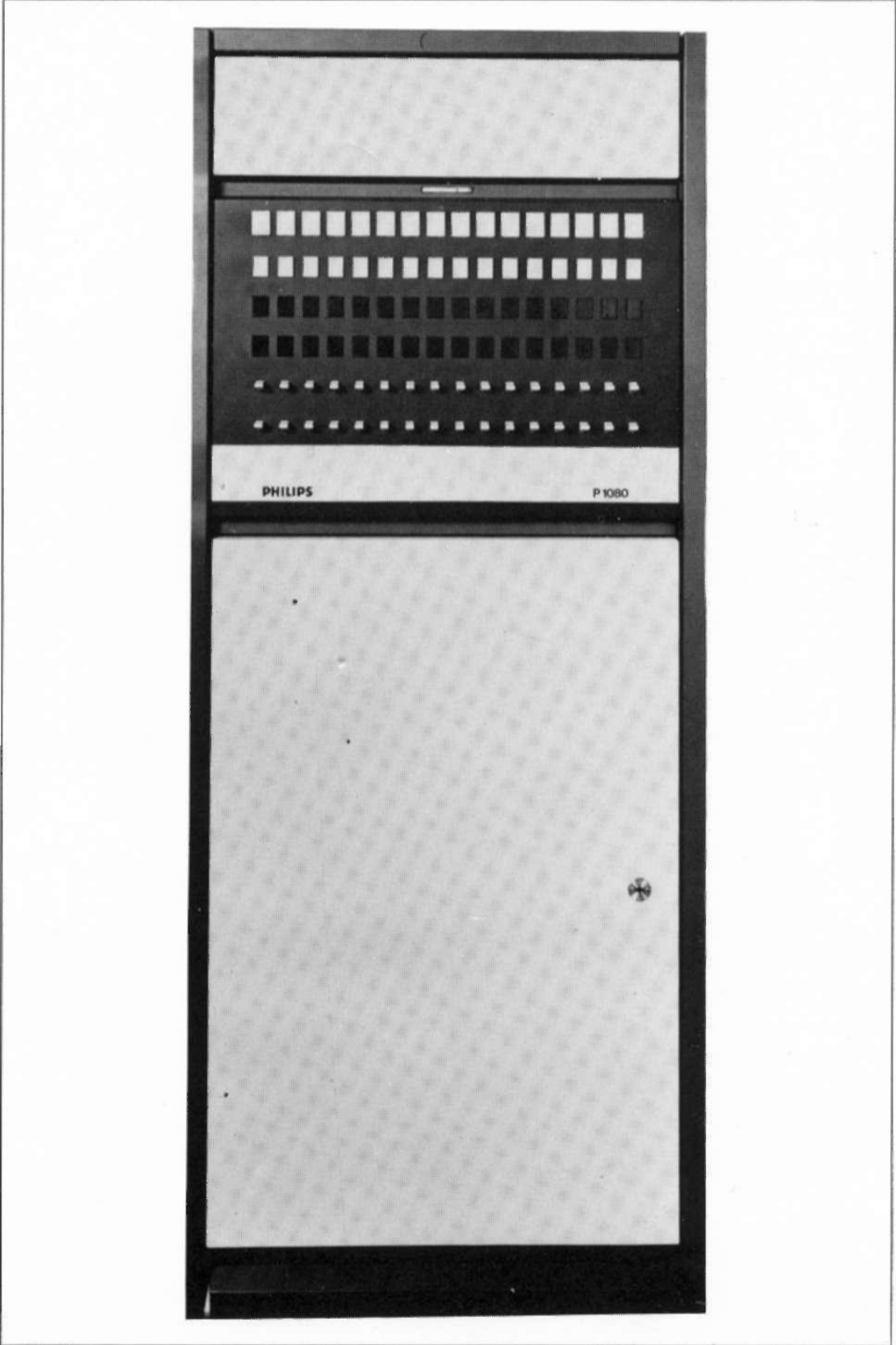
As a member of the P1000 series, the P1075 can do scientific and engineering work, but more slowly. Since the business user is not likely to want special mathematical and scientific features, they are left out — the saving in cost is passed on to the buyer.



The P1080 Data Communication Control Unit

2.13

Up to 15 lines for incoming/outgoing data can be connected to a P1000 computer via this DCCU.



The P1086 Teleprinter

This is the easiest way to communicate with a computer, either direct, or over a data Communications link.

Questions and data are typed-in at the keyboard or put through the punched-tape reader on its left. Answers come back as a print-out or as punched tape, or both. Transmission speed: 10 characters a second.



The P1087 Data Collection Device

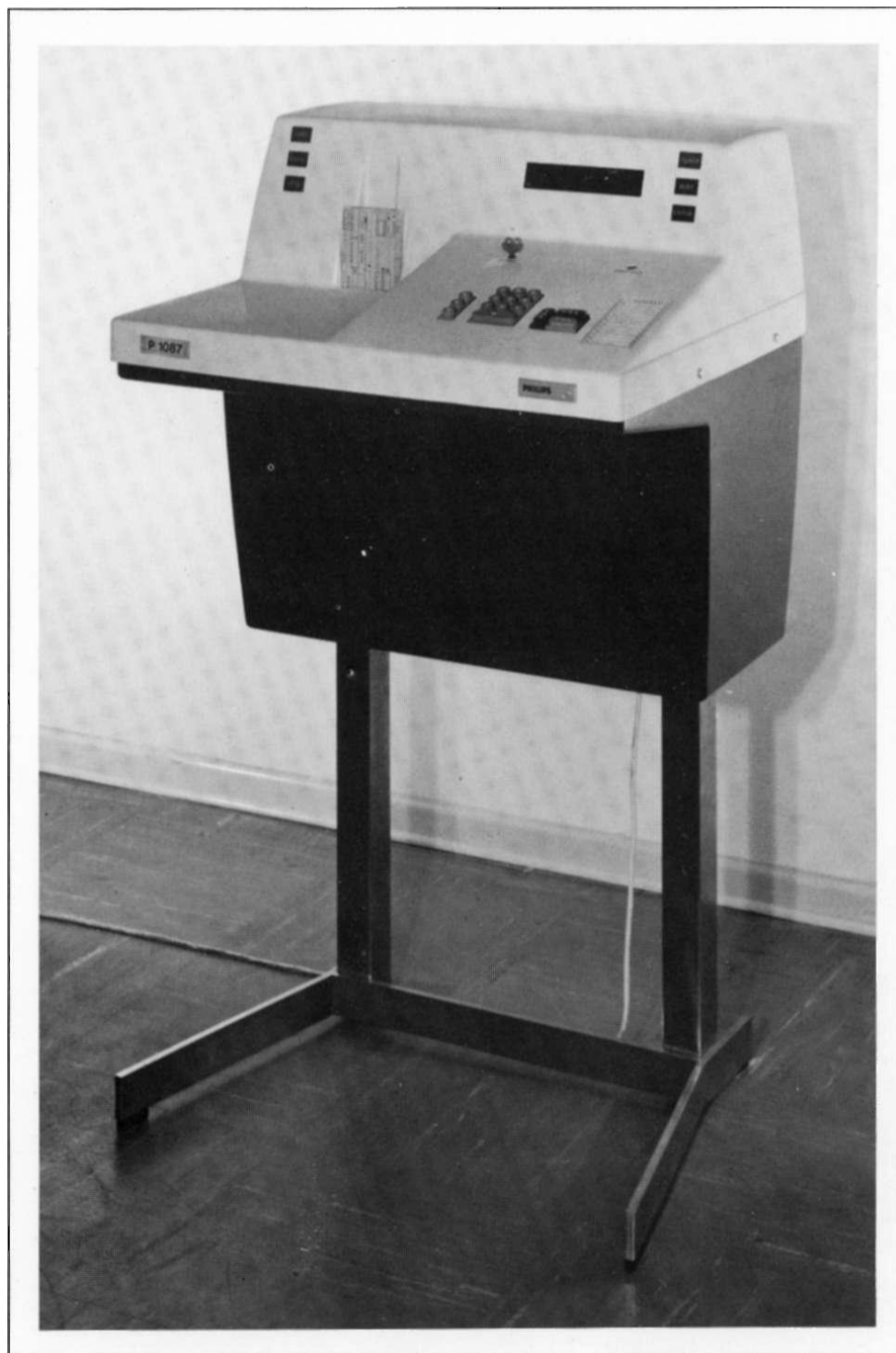
2.15

This machine collects data at its point of origin and sends it to a central computer system. Here it is either used to update the files straight away or recorded for later processing. Typical use: collecting progress data in a factory. A card, punched with job number etc, accompanies each component through the factory. At each stage of manufacture, the card is read by the P1087: any other data is typed-in at the keyboard.

The P1087 is very easy to use. All data entered is stored in a buffer memory for up to 128 characters so that it can be checked before sending. Indicator lamps tell the operator what to do: if he still manages to make a mistake, he is notified by an error light and a buzzer. Errors in transmission cause automatic retransmission from the buffer.

- Card reader reads up to two cards (80 column) or badges (shortened punched cards).
- Numerical keyboard for variable/ semi-variable data and transaction code
- Message length up to 128 characters
- Buffer memory for 128 characters
- Programmable for 12 combinations of data
- Transmission speeds: Inplant up to 9600 Baud. Outplant 600/1200/2400 Baud
- Transmission code: CCITT-5

Also available: models which will accept extra keyboard and badge data; models without keyboard and display; adapters for electrical inputs from flow meters, scales etc.



The P1088 Character Display Unit

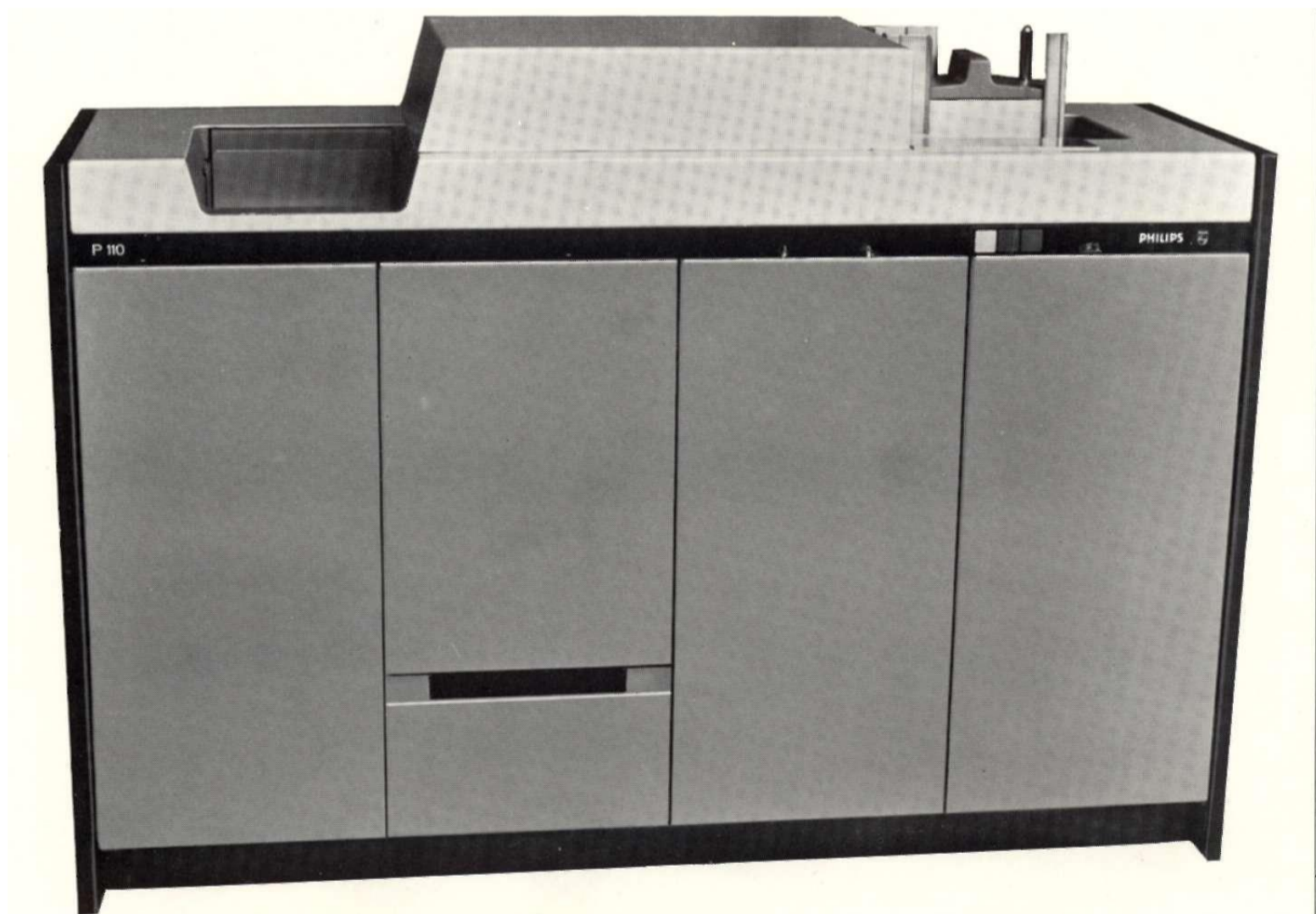
This unit is the ideal answer to the need for man/machine interaction. With it, the user can communicate direct with his P1000 computer. Typical uses: desk-top enquiry station for managers; travel booking systems; data retrieval presentation; banking, or anywhere that people need quick answers from their computer — often. Technical details are the same as for the X1600 unit on page 3.3.



P110 Card Punch

Third card punch is designed for use with the P350 Office Computers: as soon as an instruction 'Punch' is reached in the program, the punch switches on and follows the program. Half a minute after instructions stop flowing, the machine switches itself off to save running time.

- Speed: 50 columns a second
- Columns which are not punched are skipped at high speed
- Warning lights show when the hopper is empty or when the stacker is full
- Capacity: 500 cards



The P1100 Central Machine

The P1100 is an advanced third-generation machine, offered in three versions with internal memory sizes of 16k, 32k and 64k octads. Internal data path is one octad: cycle time is less than one microsecond per octad.

Like all the P1000 series, the P1100 can be added to as the user's needs expand. It is also upwards-compatible: its programs can be run on the P1200 or P1400.

The P1100 is the first step up from the P1075 low cost computer. The central machine is similar: the difference is in its greater speed of data input/output and in the possibilities of the Universal Instruction Set. The machine has the Basic Instruction Set as Standard, expandable to the Universal Set: thus COBOL, FORTRAN and ALGOL are possible on a P1100.



P115 Card Reader

1.7

This machine is designed for use with the P350 Office Computers: as soon as an instruction 'Read' is reached in the program, the card reader switches on and follows the program. Half a minute after instructions stop flowing, the unit switches itself off to save running time.

- Photoelectric reading
- Speed: up to 300 cards a minute
- Warning lights show when the hopper is empty or when the stacker is full
- Capacity: 500 cards



P120 Tape Punch

This tape punch is a low-cost way of improving the performance of the P350 Office Computer.

- Speed:
50 characters/second
- Takes Standard 7,5in reels
- Reads Standard tape widths:
1 in or 11/16in
- Codes:
5-channel CCITT
8-channel ISO or IBM
- Warning lights indicate breakage/
end of tape/full reel



The P1200 Central Machine

2.4

This is the third in the P1000 series, and the first step into the field of larger computers. Smallest core store is 64k octads, but also offered are models with 128k or 256k octads. Each model can have auxiliary core store modules added on to it in sizes of 0,5M, 1M, 2M, 4M and so on up to 14M (1M = 1,048,576 octads).

These add-on modules are slightly slower than internal core store, but much faster than any other form of auxiliary storage. The user can thus

have a great deal of fast storage at a relatively modest price. Internal data path is two octads: cycle time is 1 microsec for internal store and 2.5 microsec for the auxiliary store.

The Basic Instruction Set is Standard but can be expanded to the Universal Instruction Set. Thus, Autocode, RUG, FORTRAN, COBOL and ALGOL can all be used on the P1200.

Input/output are handled by

autonomous channels: CATCH for the slower equipment and BATCH for the faster equipment such as magnetic tapes and discs. Both types of channel can work simultaneously without using central processor time.

The control panel has switches, indicators, a display screen and an operator's typewriter. These allow the operator to check the state of the machine, also to stop the computer and type in messages.



P125 Punched Tape Reader

1.9

This photoelectric tape reader is a low-cost way of improving the performance of the P350 Office Computers.

- Speed: 50 characters/second
- Takes Standard 7,5in reels
- Reads Standard tape widths:
linor 11/16in
- Reads three codes: 5-channel CCITT
8-channel ISO or IBM
- Warning lights indicate breakage/
end of tape
- Parity checked automatically



The P1400 Central Machine

2.

This is the biggest member of the P1000 series. It is available in three models: 128k, 256k and 512k octads. Each model can have modules of 0,5M and 2M octads auxiliary core store added to it, up to a maximum of 14 million octads (1M = 1,048,576 octads). These add-on modules are a little slower than internal core store, but very much cheaper: thus the user can have a great deal of core storage at relatively low cost.

The Universal Instruction Set is

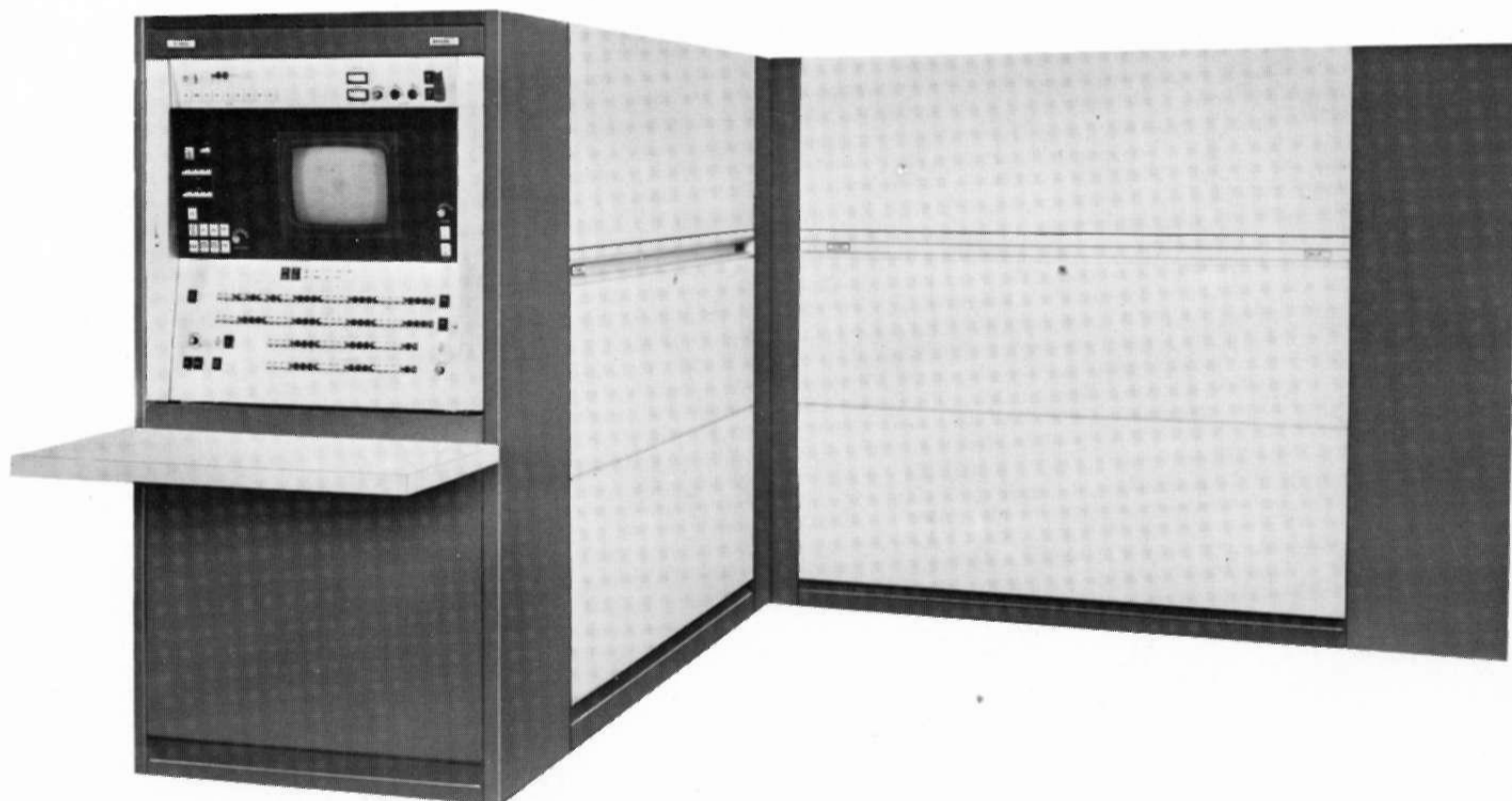
Standard: Autocode, RUG, COBOL, Fortran and ALGOL can all be used.

Data of fixed or variable length can be processed in pure binary-coded decimal or floating-point decimal. The programmer has 18 special registers at his disposal.

Input/output are handled by autonomous channels: CATCH for the slower equipment and BATCH for the faster equipment such as magnetic tapes and discs. Both types of channel can work simultaneously without using

central processor time.

The control panel has switches, indicators, a display screen and an operator's typewriter. These allow the operator to check the state of the machine and the contents of registers, also to type in messages.



The P251 Desk Calculator

1.11

Easy-to-use electronic desk calculator with three registers and accumulator. As well as the four basic arithmetic functions, there are keys for automatic percentage calculations and a constant factor.

Integrated circuits give the P251 its silent, trouble-free operation.

The mosaic printing mechanism gives lightning-fast print-out.

The machine goes up to 9999999999999: the point adjuster gives up to six places of decimals.



The P252 Desk Calculator

1.12

This machine has all the advantages of the P251 (page 1.11), plus another accumulator for added flexibility. A further feature is an automatic square root key.



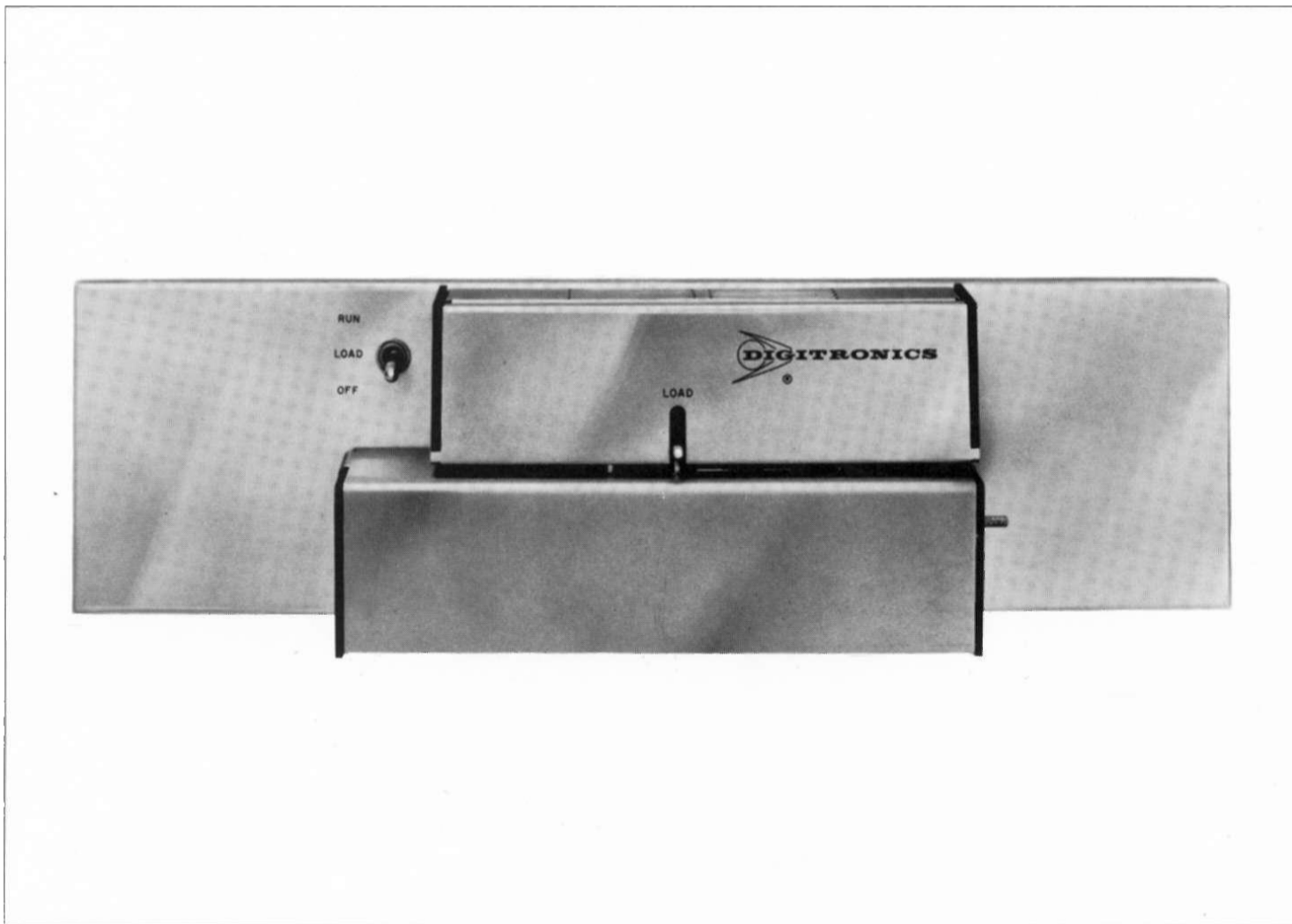
Model 2540 Punched Tape Reader

3.2

One of the world's most reliable tape readers. The 2540 works faster, has only one electrical adjustment, no read amplifier adjustments, fewer working parts and 50 per cent less interface costs.

- Speeds up to 600 characters/sec (Asynchronous stepping to 1 50 cps)
- Read mode: uni-or bi-directional
- Start response: 10 msec maximum at speeds over 300 cps
- Stop response: on character at speeds up to 400 cps
- Reads a wide range of tapes without adjustment

The full range of tape equipment by Digitronics Corporation is handled by Philips in the Benelux Countries, UK, France, Italy and Spain.



The P350T and P350S Office Computers

1.10

P350 computers can also be used for data transmission and scientific work. These features are denoted by the use of the suffix T or 'S' after the model number.

The P350T is a Standard P350 that also acts as an intelligent terminal for sending data from one place to another. A branch office with a P350T can use it to pass bigger problems to a large computer at Head Office; to send in processed results for file updating; to

get direct access to the storage capacity of the central computer; to communicate with P350T machines in other branch offices.

The P350S — the 'S' stands for 'scientific' — is a Standard P350 with store capacities of 200, 400, 600 or 1000 words of 16 bits each. The difference is in the programs. These are specially written for scientific and technical users, and include programs for: mathematics, statics, geodetics,

statistics, road building and PERT planning.

Of course, the P350S can also be used for normal commercial applications and for user-written programs.



P350 series Office Computers

1.1

These small computers bring third generation speed and reliability to the office: yet they run off an ordinary wall socket, and without air conditioning.

The members of the series look basically alike, and they are all modular, so that the user can start small and expand his system later if necessary.

All are programmed with decks of punched cards, available from a Standard library of basic commercial

application programs. Programming can be done on- or off-line. Input is completely controlled at the keyboard.

Core stores range between 200 and 1000 words of 16 bits each, which can contain programs or data. Storage can be extended by using ledger cards edged with magnetic strips. Up to eight input and output devices can be attached, four of which can work simultaneously. I/O can be on card readers and punches; tape readers and

punches; and printers. Store cycle time is 3.5 microsec.

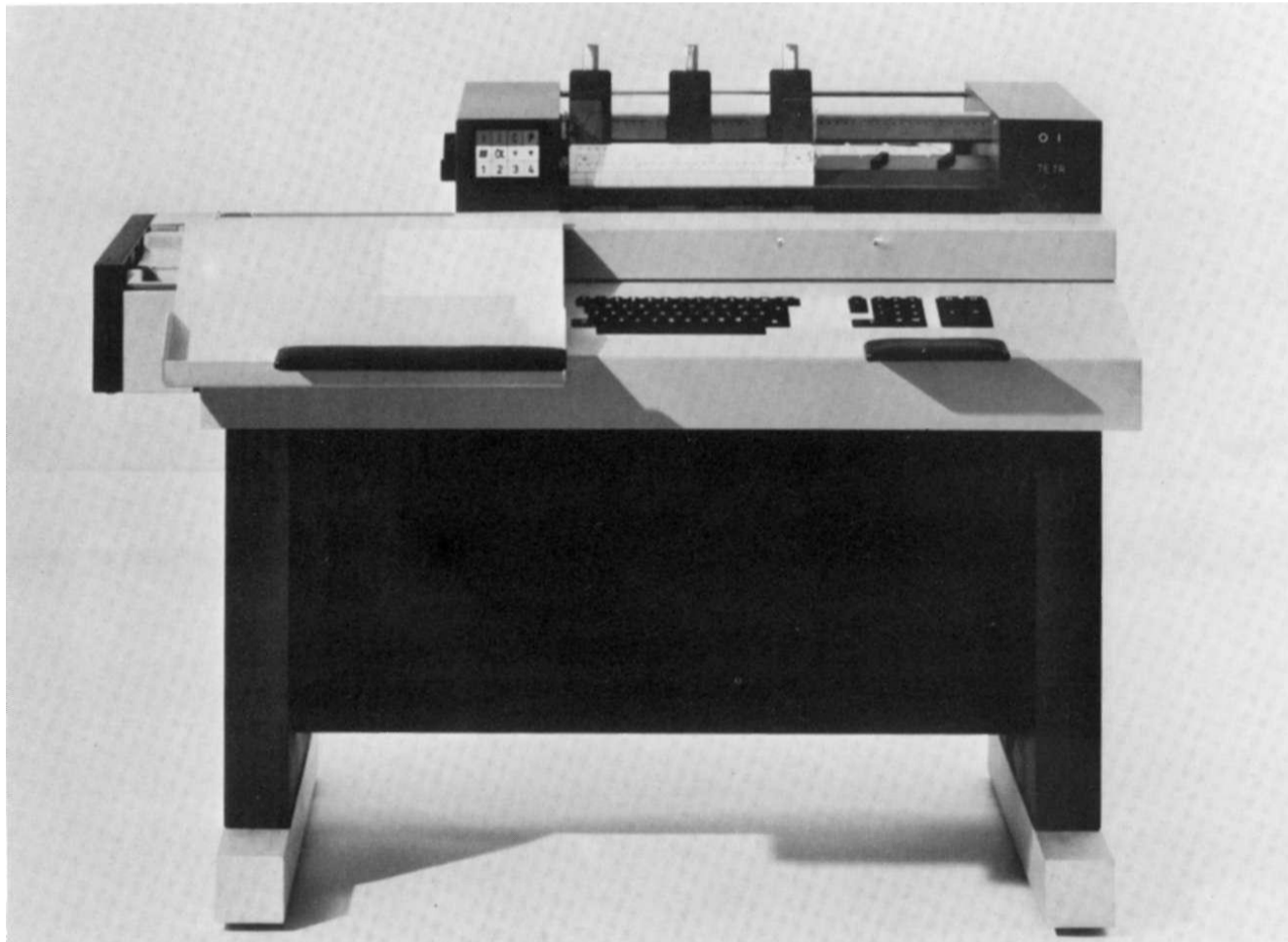
Two special P350 versions, the P352T and the P350S are for data Communications and scientific use respectively.



The P351 Office Computer

1.2

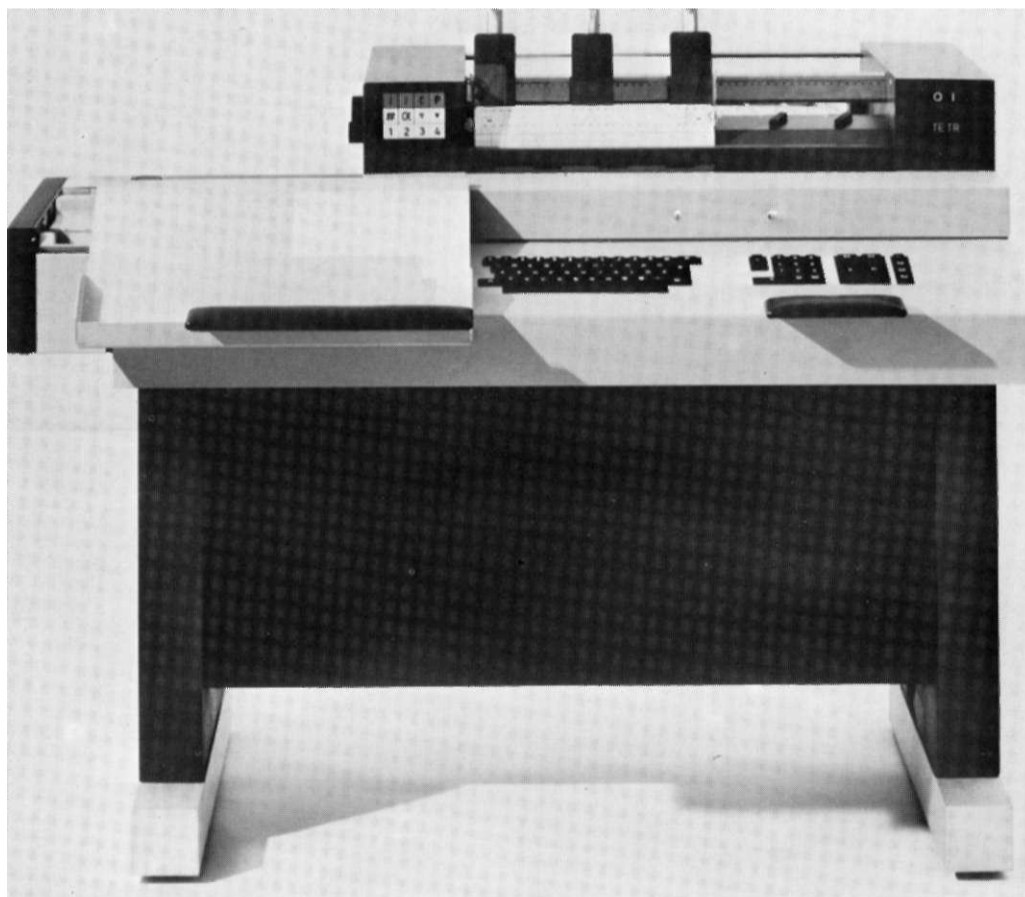
This is the lowest-cost machine in the P350 series. Its core store holds 200 words of 16 bits each: output is by punched card or paper tape. The high speed serial printer and central processor are the same as those of the more powerful machines.



The P352 Office Computer

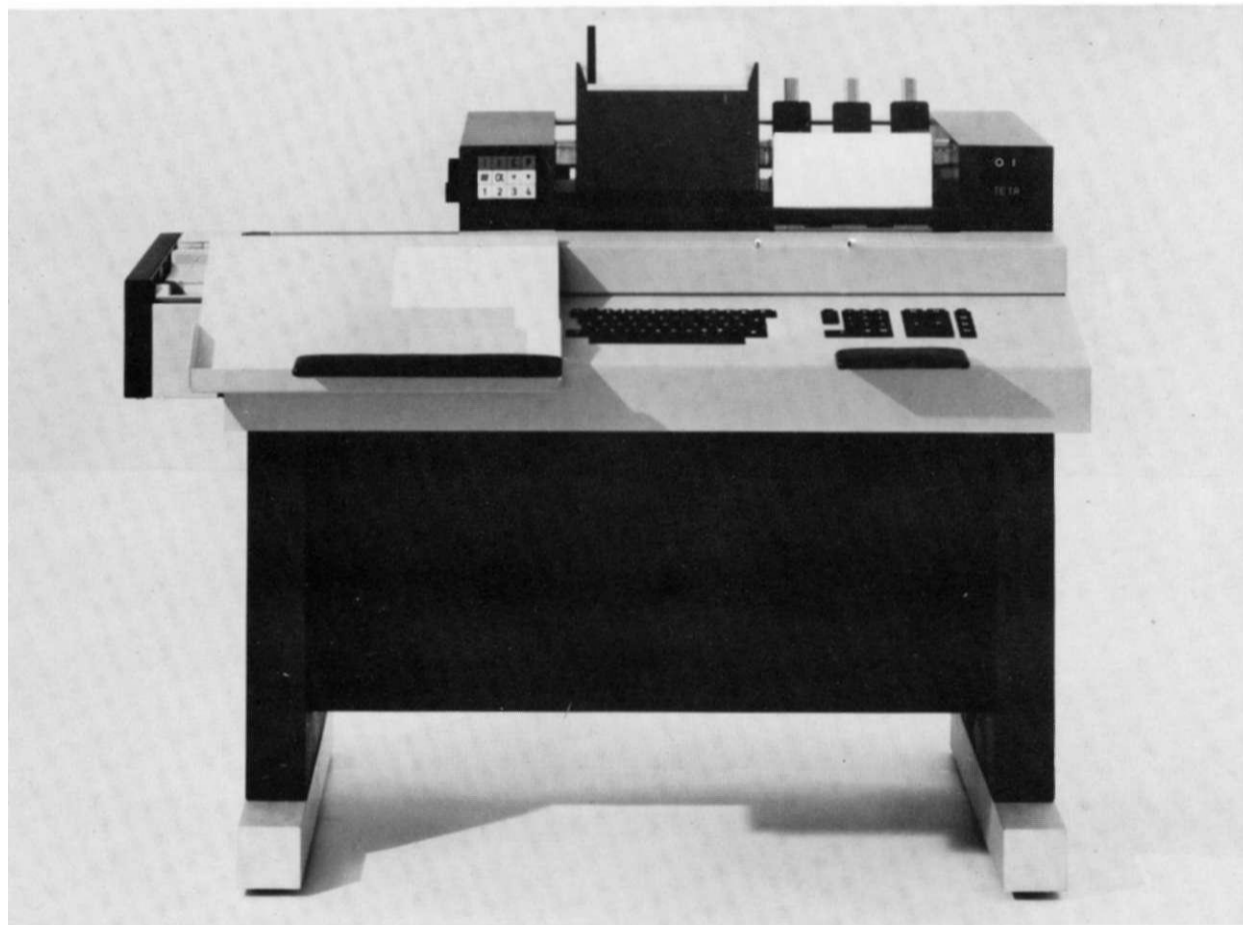
1.3

The P352 can have a core store of 200 to 1000 words, depending on the model: this gives it greater program possibilities than the P351. Both input and output are by punched card or paper tape. Point-to-point data transmission and scientific use are also possible (page 1.10).



The P353 Office Computer

The P353 has all the features of the P352 plus one important advantage: its storage can be increased by the use of ledger cards edged with magnetic strips. Each ledger card can store up to 128 digits of data.

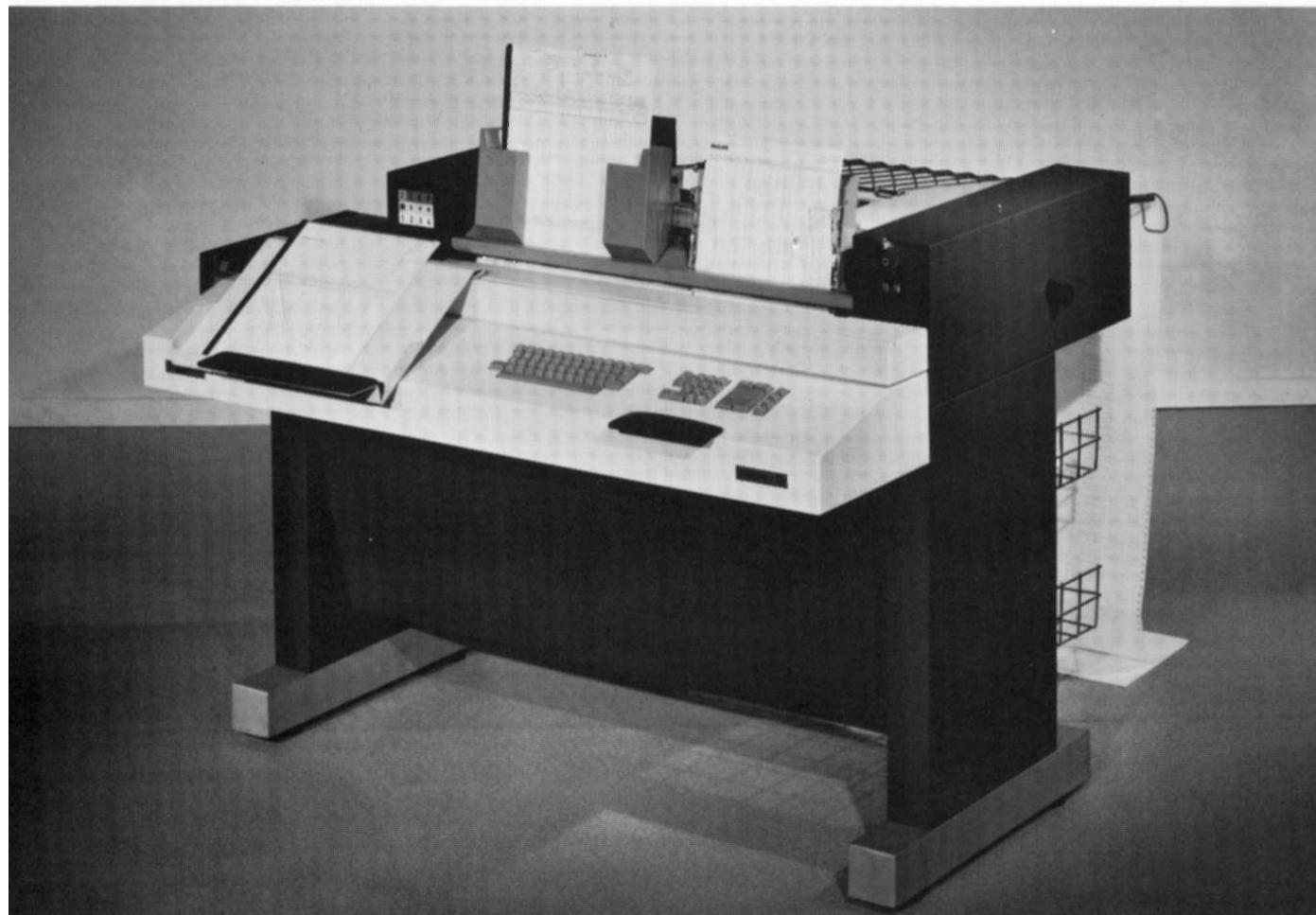


The P359 Office Computer

This is the most powerful of the P350 series. The core store holds 600 or 1000 words of 16 bits each, depending on the model: both input and output are by punched card or paper tape. As with the P353, memory can be extended by using ledger cards edged with magnetic strips which can store up to 672 digits.

Programming is by decks of punched cards, available from a Standard library of basic commercial application programs. Special programs can be

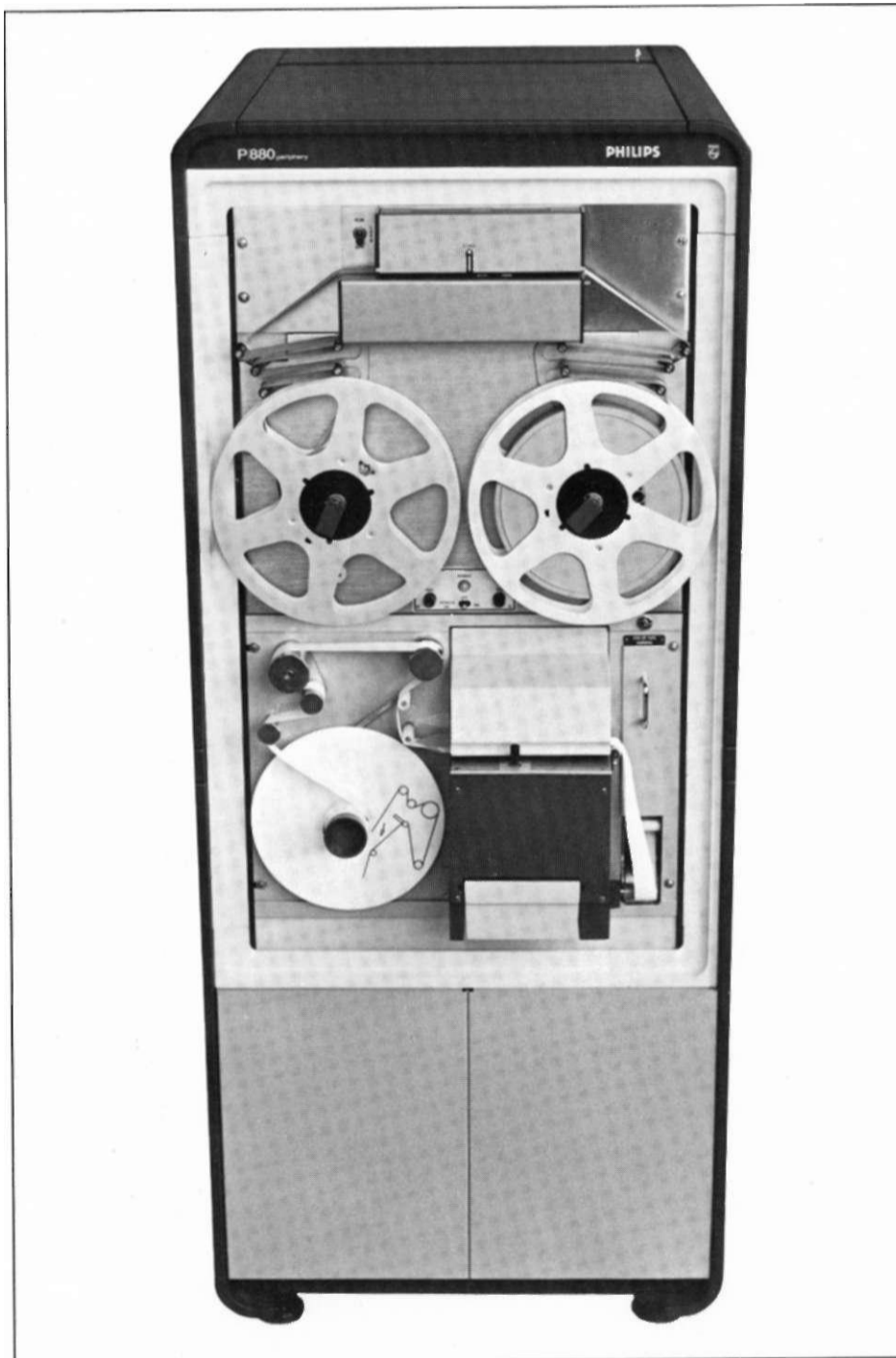
supplied on request, or the user can write his own programs. Short programming courses for users are easily arranged through local Philips sales organisations. Point-to-point data transmission and scientific use are also possible (page 1.10).



P800 Punched Tape Equipment

5.4

Two punched tape readers are available: one reads at 333 characters/sec and the other at 600 characters/sec. Both machines read Standard one inch tape punched in 5, 6, 7 or 8 channels. There are two tape punches, working at 75 and 150 characters/sec respectively; they punch Standard one inch tape as above.



P806 Card Reader

5.3

- Photoelectric reading
- Speed: up to 250 a minute
- Warning lights show when the hopper is empty or when the stacker is full
- Capacity: 500 cards



P812 Line Printer

This machine can print up to 600 lines a minute, each with 132 characters. A roll of paper is fed between a bank of 132 electronically fired hammers, and a moving drum embossed with the characters. The places where the printing is to come on the paper are controlled by a punched tape.



The P823 Disc Unit

A moving head, large capacity disc unit with interchangeable disc pack. The disc pack consists of six discs, the inside ten surfaces of which are used for recording. This gives a capacity of 7.25 million characters per disc pack. As the disc packs are interchangeable, this gives a practically unlimited size of file and a practically unlimited number of files. The average access time to any point on the disc pack is only 65 milliseconds.



P832 Magnetic Tape Unit

5.7

Nine track non-return-to-zero recording is used on the P832 magnetic tape unit. The recording is arranged so that the least used tracks are on the outer edge of the tape, which reduces even further the chance of reading and recording errors.

The tape speed is 37.5 inch per second and the recording density is 800 bits per inch — a transfer rate of 30,000 characters per second.



P850 Mini Computer

5.8

The P850 is a small computer using TTL integrated circuits, with a 1 k octad core store expandable by 1 K modules to 4k octads. The P850 can be rack-mounted or stand-alone: it can be plugged into a normal household socket.

Typical uses: programmable logic unit for the OEM market; data logging; data acquisition; alarm guard; test and measurement; data concentration; remote terminal; instrument control; numerical and process control in industry.

- Word length: 16 bits
- Cycle time: 3.2 microsec
- 15 general-purpose registers
- Up to 20 peripherals can be connected: I/O typewriters, punched tape equipment
- Options include: real time clock; extra interrupt lines; power failure automatic restart



P880 Small Computer

5

The P880 is the biggest, fastest machine in the small computer price range. It offers scientific, academic and engineering staffs the computer they want at a realistic price.

- P880 runs off normal mains voltage and needs no air conditioning.
- Five P880 models: 8k, 16k, 24k, 32k, 64k words. (Word = 16 bits + 2 parity bits).
- Software: punched card/tape/disc oriented.
- Type: 16-bit parallel binary. Two's complement arithmetic. Direct & indirect addressing with and without modification. Continuously addressable store.
- Standard input/output: 16 interrupt lines (internal or external). 16-bit programmed channel.
- Options: floating-point instruction set, storage protection, real-time clock, relocation register.
- I/O Options: up to 24 additional external interrupt lines. 16-bit multiplex channel. Data chaining. Simplex channel. Data Communications.
- Store cycle time: 0.64 microsec.

The P880 Computer System

Here is a typical P880 configuration, (left to right): Card Reader (800 cards/min); Line Printer (600 lines/min); Magnetic Tape Units (30,000 characters/sec 1/0); Tape Punch Reader (150/600 characters/second); CPU (0.64 microsec cycle time); Console Typewriter with tape punch and reader (10 characters/sec); Discs (average access 65 millisec to any of 7,25 million characters).



P9202 Computer

5.9

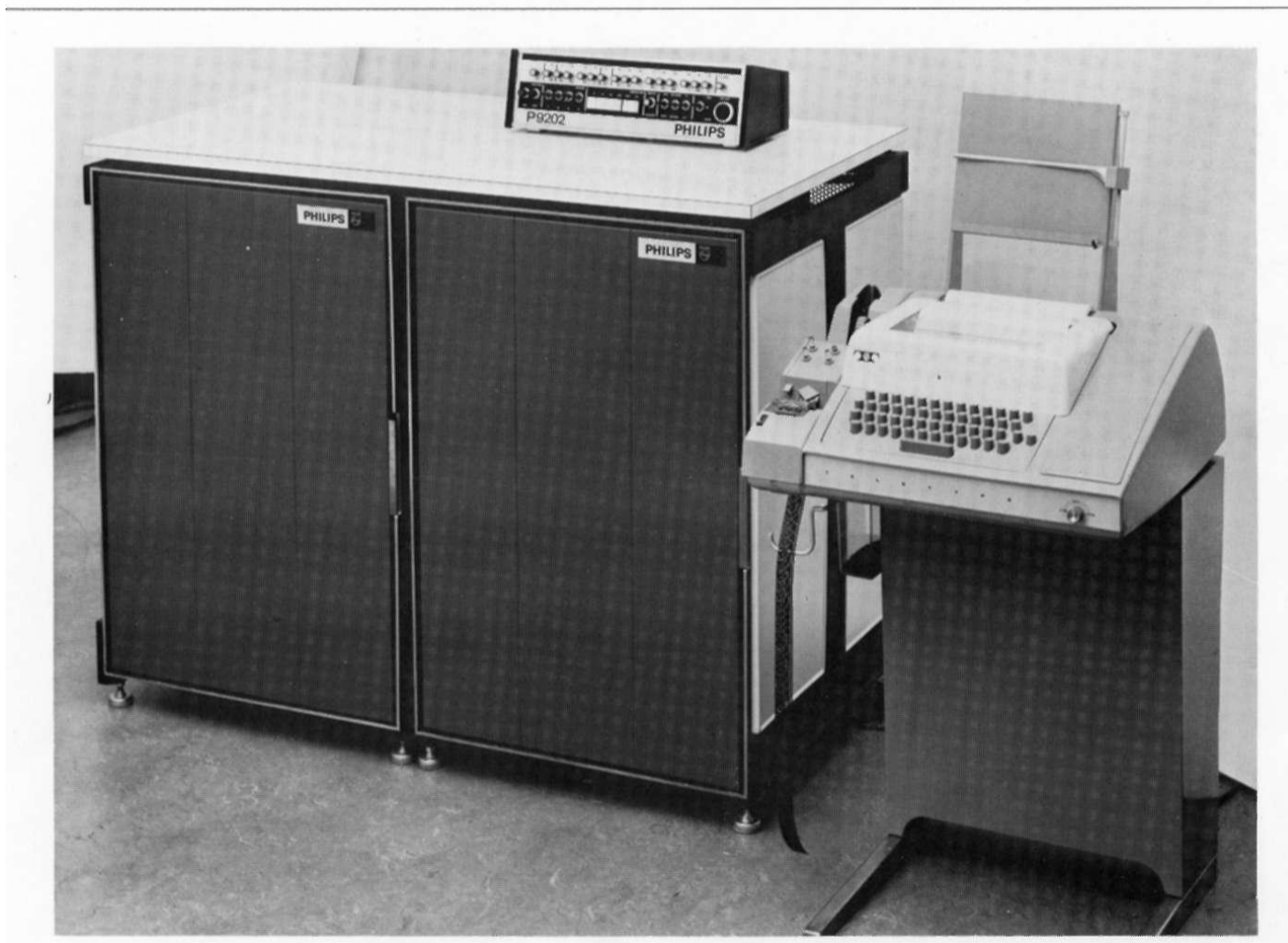
The P9202 is a compact, fast general purpose computer. It is designed for open-shop engineering and scientific computing, also for on-line real-time data processing and control.

- 16-bit word length
- 4096-word memory, expandable to 32,768 words
- Cycle time: 960 nanosec

- Direct and indirect addressing
- Basic instruction set: 70 instructions
- Four I/O modes give transfer speeds from 87k to over 1M words/sec

The user communicates with his computer via the P9203 Console Typewriter, at right in the picture. Questions and data are typed-in or put through the punched-tape reader at left

of the keyboard. Answers come back as a print-out, or as punched tape, or both. Transmission speed: 10 characters a second.



The P9205 Central Machine

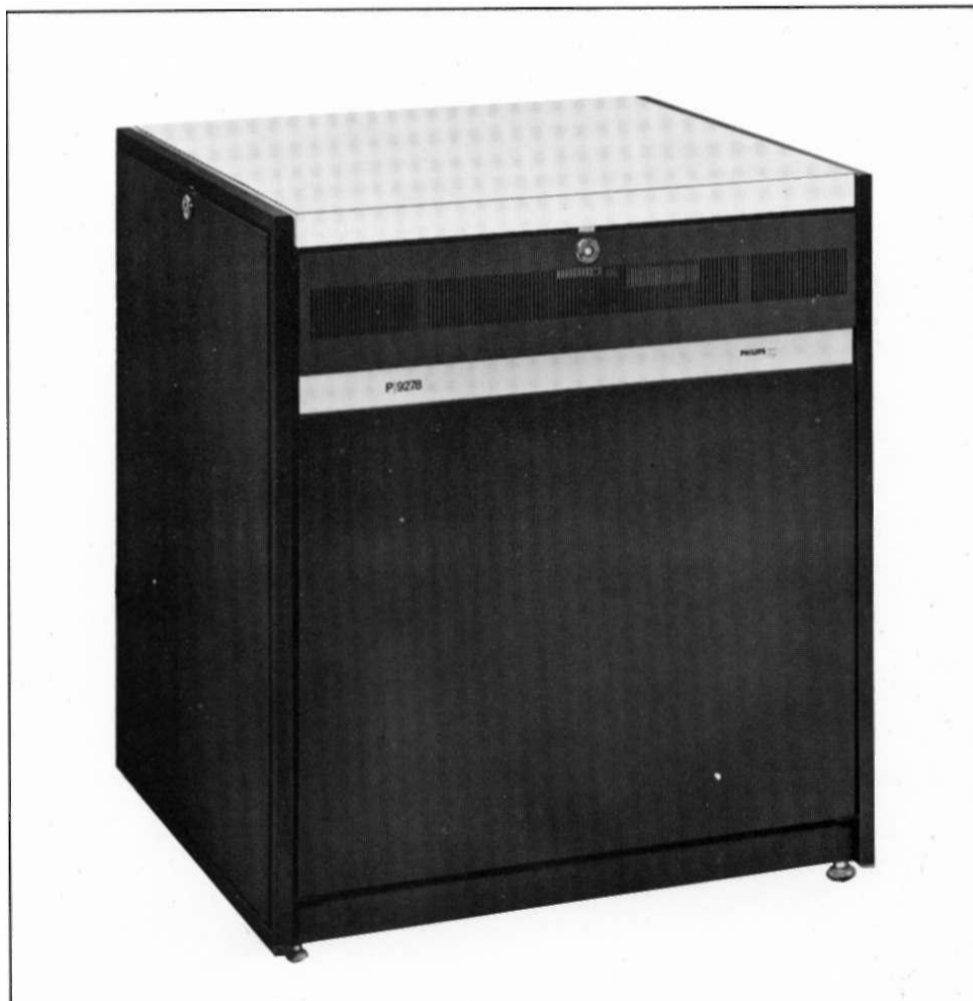
The P9205 is a small general purpose computer for real time on-line data processing and control. Typical use is as a satellite computer for a P1000.

- Suitable for rack mounting
- 16-bit word length
- 4096-word memory, expandable to 16,384 words
- Cycle time: 1.6 microsec
- Direct and indirect addressing
- Basic instruction set: 30 instructions
- Four I/O modes give transfer speeds from 78k-300k words/sec



P9278 Adapter

This device controls data transport between a P1000 system and a P9205 computer (probably controlling data communication equipment). Adaptation is necessary because the P1000 logic has an 8-bit data path and the P9205 interface has a 16-bit data path. At the P1000 side, the adapter can only be connected to a BATCH, possibly with a dual entry switch: at the P9205 side it connects to the Standard I/O bus.



P.T.S. Bank Terminal

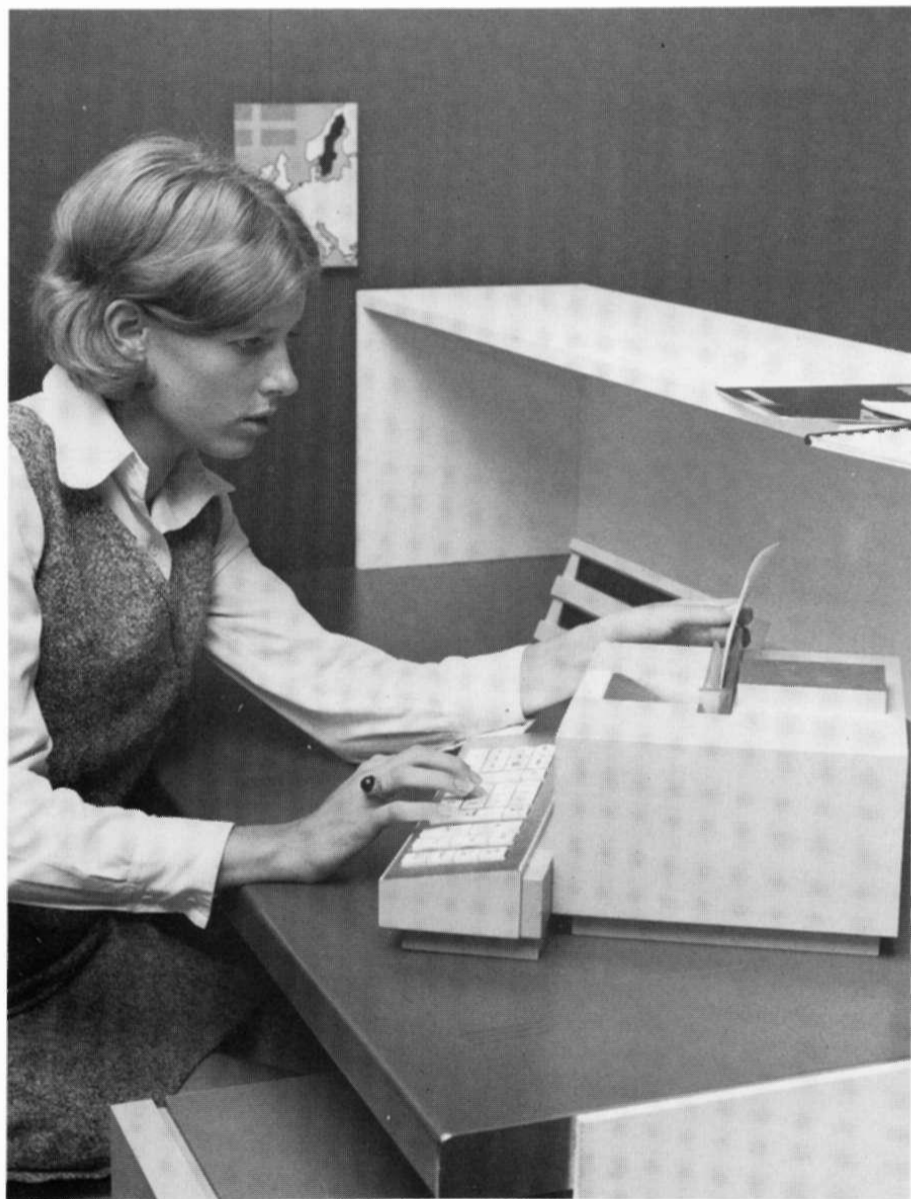
The most important recent development in banking is the use of data links between a central bank and its outlying offices.

The Arengo bank terminal system consists of a wide range of modules that can be used to build up many different systems, on-line or off-line. The user can thus have a system to suit his immediate needs, and add new functions later as required.

For example, a bank might have some of its offices on-line to the central computer, and some of them off-line. In the on-line system data is sent straight over a wire to the computer. As a safety precaution it is also recorded on tape: if there is a break in transmission, the data is not lost and the teller can go on working normally. From those offices which are not directly connected (i.e. off-line) the tape is sent in for processing at night.

Advantages of an on-line system:

- Faster updating of central records
- Overdrawing is much harder
- Faster, more accurate management information
- Better services for the customer: cash dispensers, credit cards etc.



Time Sharing Centres

4.2

Philips time sharing systems are now installed in the Benelux countries, Germany and France. Each system can serve up to 70 terminals, and is designed for work in engineering, operations research on educational programs for Universities and Technical Colleges, and for statistical work.

Time sharing centre The Hague



The Tape Encoder X1100

3.5

This is an off-line key-to-tape equipment, i.e. it puts data onto magnetic tape. The X1100 is two machines in one unit: data is entered at a Standard key-punch key-board, then verified at the flick of a switch. Third generation technology gives a 30-40% improvement in productivity over traditional key punch equipment.

Anyone can easily learn to operate an X1100: experienced keypunch operators convert to the new equipment in less than a day. Operator comfort is built in: the keyboard is adjustable, there is plenty of working space and even a drawer for personal belongings.

Two models are offered, for 7-track and 9-track tape, recording in BCD and EBCDIC codes respectively. Recording densities: 200, 556 and 800 bits per inch. Each record is stored in a programmable buffer memory so that it can be corrected before being recorded on tape.

- Two systems in one unit
data entry/verify controlled by one switch
- Integrated circuit reliability
- Easy to use
less training time, fewer mistakes
- Economical
higher productivity, less down time

Philips tape encoders are backed up by a full range of equipment. Tape Poolers, consolidate multiple input tapes from encoders onto bigger reels of tape. This reduces tape handling time at the computer. The Philips Tape Communicator is basically a tape encoder that can also send data over a telephone line to a distant computer. The Philips buffered Line Printer can give a print out from a tape encoder or from



The X1210 Mono Disk Drive

3.

This unit is designed for the memory needs of small computer systems. Built with the original equipment manufacturer in mind, it has a pull-out chassis that fits neatly into a Standard EIA 1 9in rack. The X1210 is a complete package: it comes ready with all the mechanisms, controls and supporting electronics needed to operate it.

Storage medium is the Philips mono disk cartridge, containing a Standard 14in magnetic disk which can store

over 20 million bits. Two versions are offered: 1 6-sector and 24-sector. Two moveable read/write heads access the top and bottom surfaces of the disk at the same time: only one head is energised at a time. Average positioning time of the heads is 125ms.

The disk cartridge is made so that dust cannot get in while it is in store: in operation an air filter system keeps the dust out. Built-in safety features protect the disk against operator mistakes: the

unit cannot start until the cartridge is put in and the drive is locked in the rack; the heads are shut out until the cartridge is inserted. Numerous safety devices also protect the disk in the event of machine failure.



The X1600 Display Unit

3.3

For on-line communication with most computer systems.

- Easy to read
- Easy to operate
- Low cost
- Configuration flexibility

Applications include: desk-top display for management information; aviation; data entry; information retrieval; stock control; order processing; time sharing etc.

Display format: up to 1280 characters

Viewing area: 230mm x 124mm

Repertoire: 64 characters USASCII code

Cursor:

Destructive or non-destructive.
Movable in four directions
step-by-step or continuously.

Edit functions:
all

Communication:

via built-in digital modems and
in-plant lines; or via built-in CCITT
interface, external public telephone
modems and out-plant Standard

telephone lines.

Transmission modes:

Asynchronous: 10 bits per character
half duplex
Synchronous: full
duplex

Transmission rates:

600, 1200, 2400, 4800, 9600 Baud

Configurations:

local, remote, multidrop, multipoint

