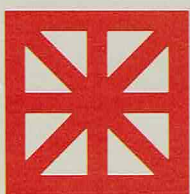


CR8 microcomputer - for professionals...



Christian Rovsing A/S
Copenhagen · Denmark

Why you should choose the professional solution

A real computing power

To the professional, the only difference between microcomputers and other computers are price and physical size - the microcomputer should offer the same range of software, computing power, memory expansibility and simple or sophisticated I/O interfaces.

The CR8 will benefit all professionals - system houses, OEM's, establishments and individuals. A breakthrough in computing power, performance and price. The CR8 combines the industry standard Multibus (IEEE 796) in a single or multiuser environment with features such as X-Net (Local Area Network) and PAM (Data Acquisition and Control). The CR8 is a complete high performance dual

processor microcomputer which can be adapted to your specific needs. Add memory, add I/O, ... from dozens of manufacturers (Multibus), use X-Net or PAM to perform tasks within:

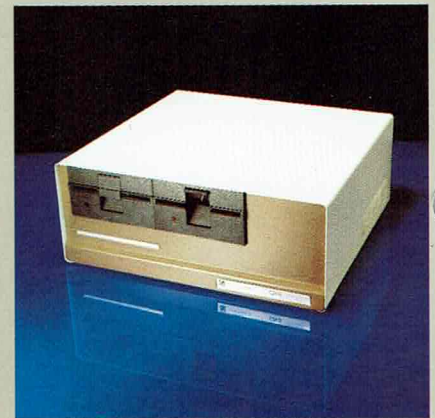
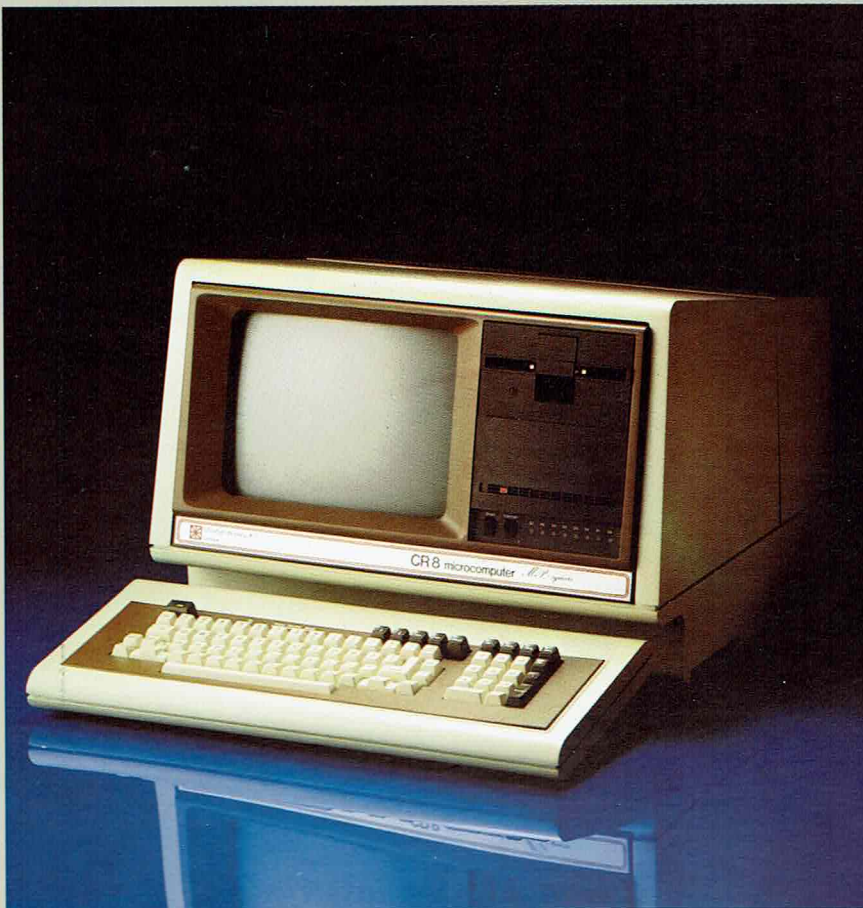
- Administrative EDP
- Data communication
- Mainframe communication
- Corporate network attachment
- Process control
- Data acquisition
- Office automation
- Text processing

In a single highly integrated computer the CR8 combines the power of a 16 bit CPU with the flexibility of a dedicated 8 bit CPU for the off-loading of file and terminal process-

ing. Furthermore, each additional group of 4 users or communication lines is supported by a dedicated 8 bit CPU for unparalleled performance in a multiuser or sophisticated communication environment. The memory addressing capability of 1 Mbyte rivals that of many minicomputers.

Broad and versatile software

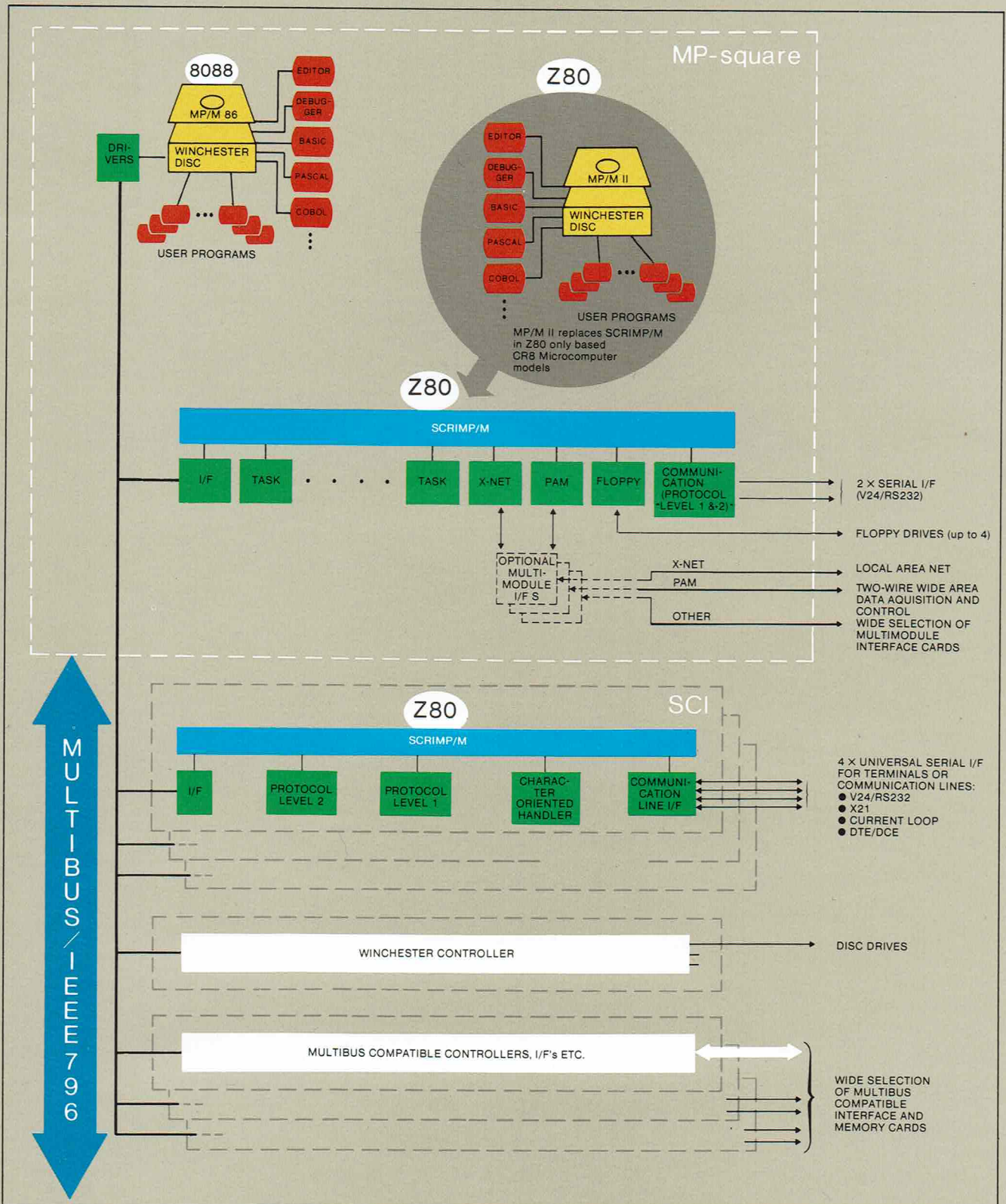
Combining CP/M or MP/M with the fast SCRIMP/M gives you access to hundreds of proven program packages - and an unrivalled performance. Packages applicable with the CR8 range from compilers, word processors, etc. to sophisticated communications and networking. The CR8 is immediately useful in a multitude of end-user environments - and as you expand, so will the CR8!



MP-Square

CR8 Microcomputer

CR8 single- and multiuser environment



CR8 real-time CP/M and MP/M systems are the answer to professional organisations demanding for enhanced processing capacity, providing the microcomputer with innumerable capabilities. MP/M and CP/M are the most widespread operating systems and give access to thousands of standard application packages, compilers and utilities. Combined with the real-time multitask *SCRIMP/M operating system + MP/M or CP/M, the system provides professional solutions to business, industrial and system application requirements. The unique features and facilities in this solution enable you to develop real-time application packages using compilers and utilities under the multiuser en-

vironment of the MP/M and run the integrated application in a single or multiuser real-time MP/M environment. Optimal utilisation of the capacity is provided by load sharing between MP/M and SCRIMP/M. Standard application packages - developed or being developed - under MP/M or CP/M run direct on the CR8 microcomputer. Furthermore, they can now be enhanced by the capabilities of the real-time operating system by means of the SCRIMP/M, thus achieving power of totally transparent multi-processing to applications under MP/M.

* SCRIMP/M: Subset Comparable Real-time Implementation of MP/M

Application packages available with the CR8:

- FORTRAN
- COBOL
- BASIC
- PASCAL
- Text processing (Wordstar TM)
- Spelling (Spellstar TM)
- Electronic Spread Sheet (Calcstar TM, Visicalc TM)
- Project management
- Other packages available from hundreds of vendors

Capabilities of implementing complex multichannel host interface and attachment software for most widespread mainframe vendors:

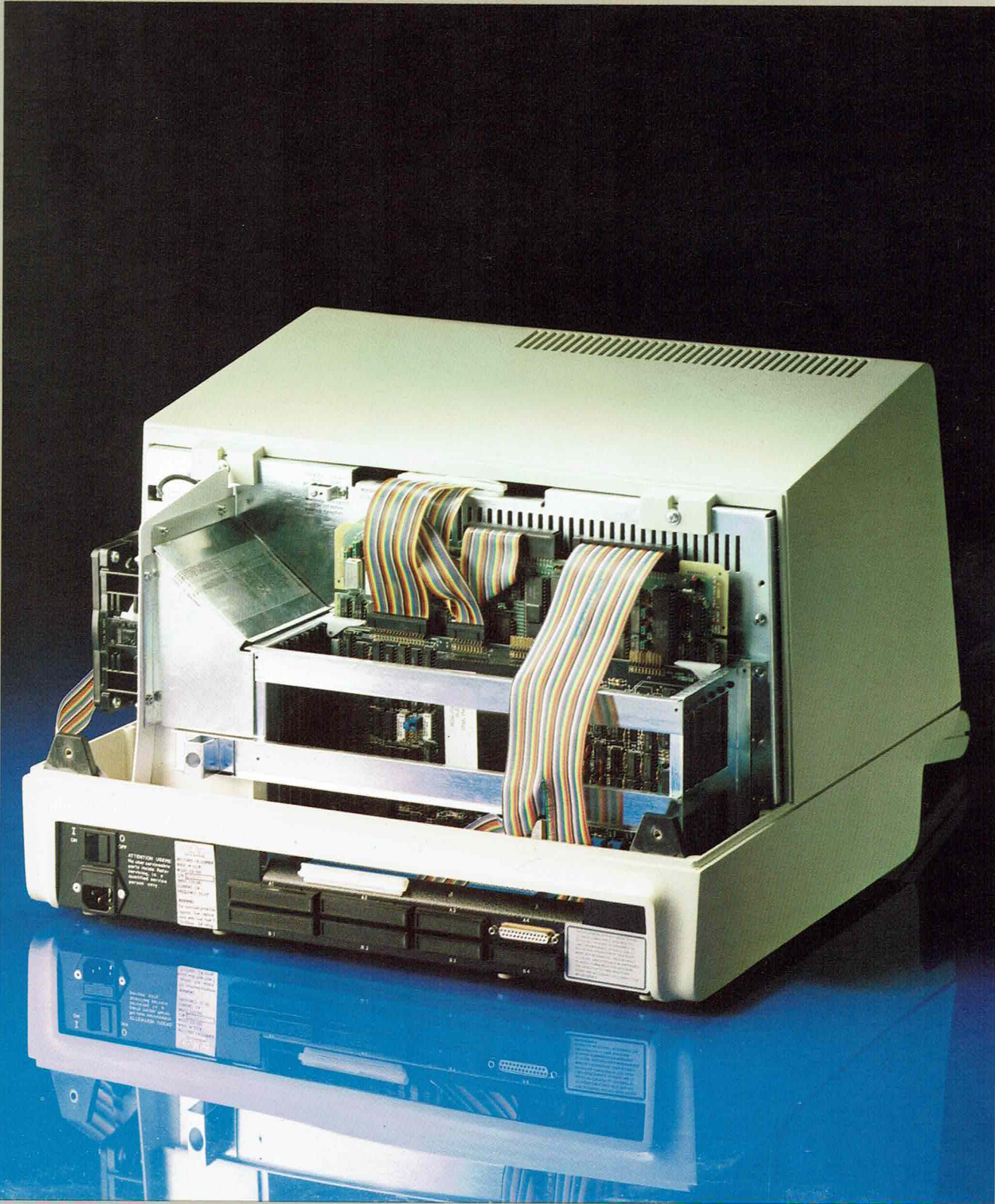
- 3272, 3274, 3276 (IBM, BSC/SNA)
- 7502 (ICL CO2, CO3)
- TC500 (Burroughs POLL, SELECT)
- UTS400 (Univac, DCA)
- Others



CR8 system environment

Unrivalled performance and capability

CR8 Integrated Workstation Model



CR8 Integrated Workstation Model

The CR8 Integrated Workstation is a compact desk top workstation including a built-in Multibus compatible card cage, a versatile intelligent terminal, a high capacity power supply, and holding two 5¼" minifloppy disk drives or one mini-floppy and one mini Winchester rigid disk drives for large storage requirements. The integral card cage holds the MP-square card providing the central computing power of the CR8 as well as space - depending on the model - for 3 or 4 additional Multibus cards - Serial Communication Interfaces (SCI), memory, I/O, I/F cards available from numerous sources.

CR8 Cabinet Model

The CR8 desk top or rack-mountable cabinet provides the features of the Integrated Workstation without the terminal. In addition to the MP-square board, the CR8 Cabinet Model provides space in its card cage for up to 3 further Multibus compatible cards.

CR8 computing power

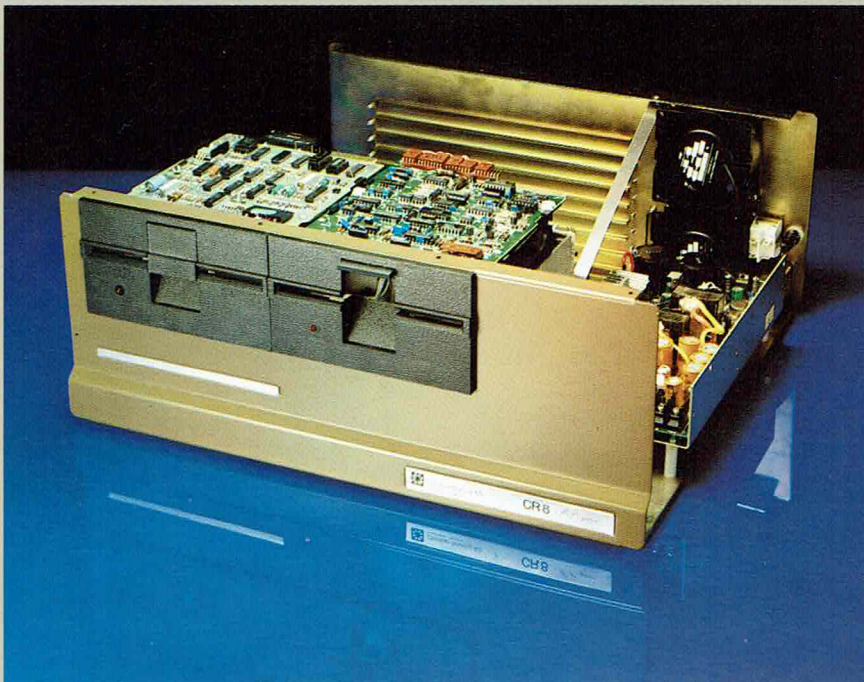
The central computing power of the CR8 is provided by the MP-square (Multi Purpose - Multi Processor). The MP-square is a highly integrated single board computer with a wide range of on-board interfaces and options, ensuring its capability to meet application requirements ranging from very small to very large systems.

- Standard Multibus interface
- 3 on-board connectors for expansion with standard INTEL ISBX multimodules or special X-Net and PAM Multimodules.
- Dual CPU's (8088 (16 bit), Z80 (8 bit))
- 128 Kbyte RAM on-board, divided into 64K local RAM on each CPU. Globally all memory is accessible by both CPU's
- 1 Mbyte addressing range for both CPU's (Z80 Map-extended)
- On-board Floppy disk interface (up to 4 drives)
- Two on-board serial interfaces - one limited (normally used with terminal) and one full modem (sync, async, HDLC, SDLC, BSC).

CR8 communication

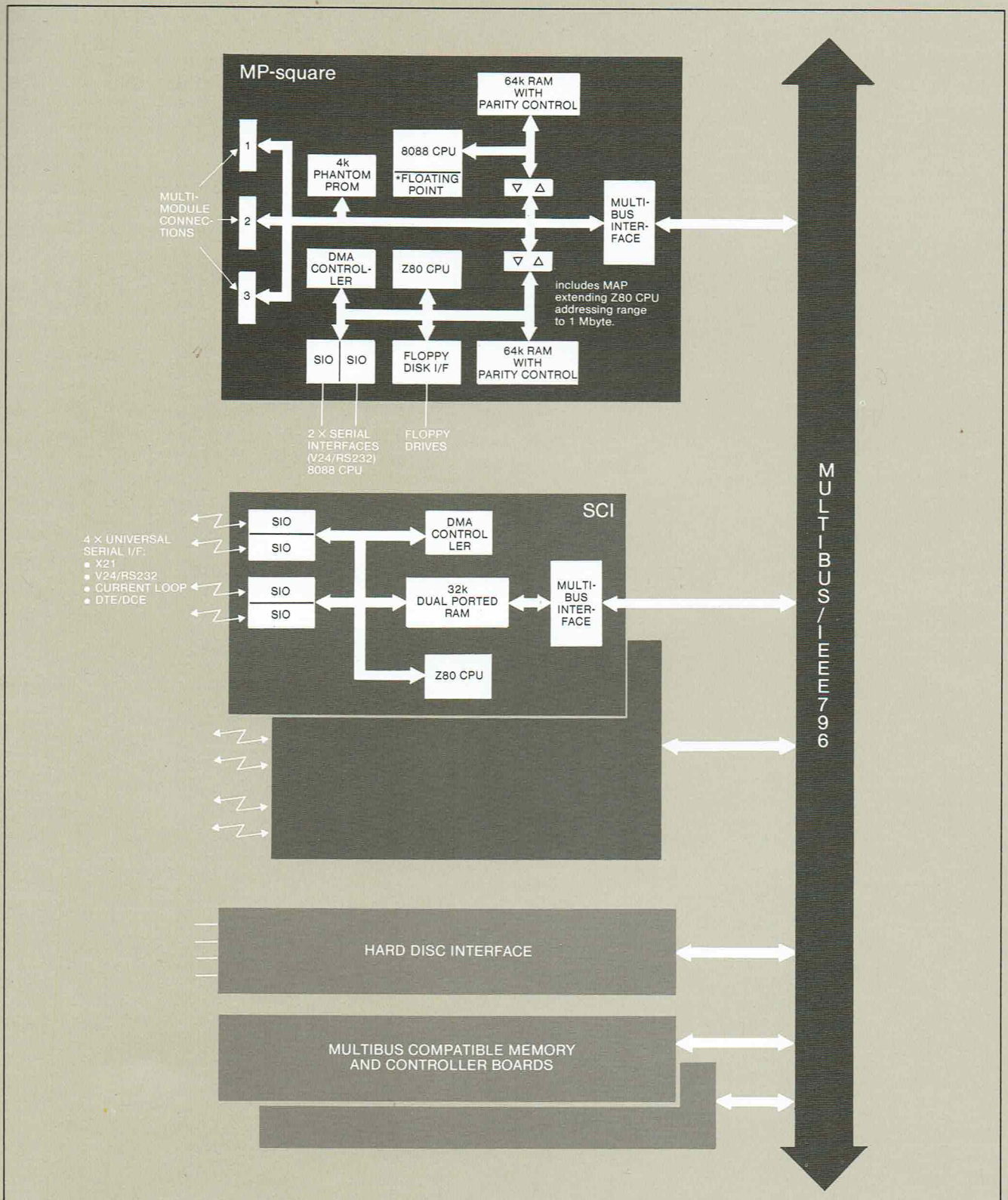
The unique capabilities of the CR8 in data communication are achieved by distributing the communication protocol and line handling to SCI's (Serial Communication Interfaces). The SCI is a single board computer containing its own CPU (Z80A), memory (32K RAM, BOOT, PROM) and 4 universal serial interfaces (strap selectable V24/RS232, X21 or current loop 20 mA). The SCI autonomously executes the protocol software loaded into its on-board RAM, and thereby relieves the CR8 central computer. Numerous protocols and line procedures are applicable with the SCI:

- ASYNC
- BSC (IBM)
- SDLC (IBM)
- HDLC
- X25
- X21
- UNIVAC
- CO2 (ICL)
- CO3 (ICL)
- NCR
- Others



CR8 Cabinet Model

CR8 - multi purpose, multi dimensional



X-NET Local Area Network

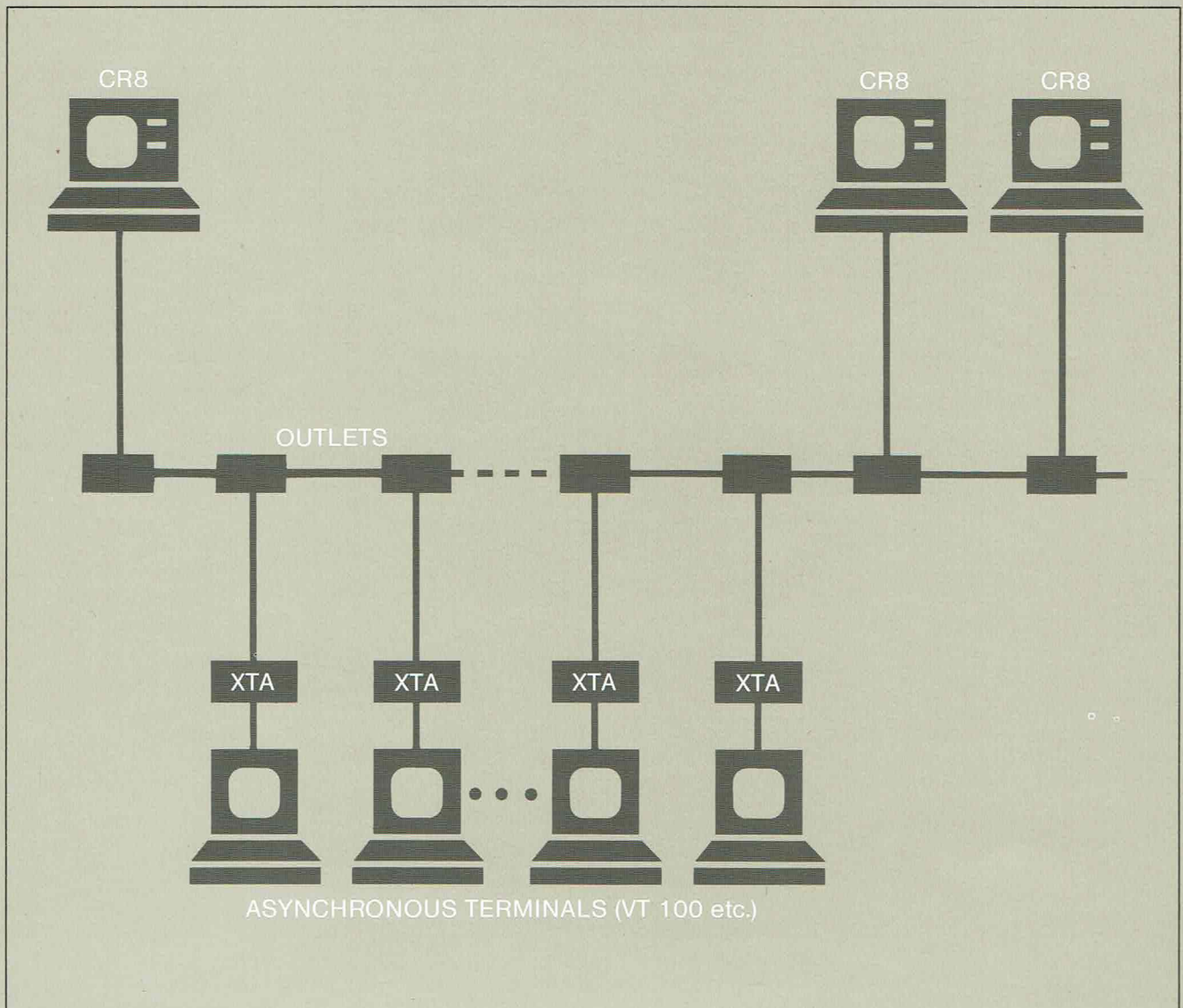
- Corporate networks
- High speed interconnection of computers
- Sharing of terminals between computers
- Multicomputer access terminals
- Interconnection of distributed CR8 based process control substations

The CR8 is connected to the X-Net 2 MBit Local Area Network via a single position plug-in Multimodule (XMA). X-Net can cover a circular area of up to 4 km (2.5 miles) in diameter and support 256 attachments of CR8's or asynchronous terminals connected via XTA's, self-contained Terminal Adapters requiring no modification of the terminal. Multiple branching of the X-Net is possible by using XAB units, i.e. X-Net Amplifier and Branching units. A simple dialogue allows terminals

to log in to CR8 microcomputers, or CR8 to CR8 communication.

The CR8 XMA Multimodule allows multiple simultaneous conversations between devices on the X-Net

The high performance cost effective noise immune X-Net is physically based on a coaxial cable pair and robust wall-outlets, providing stable and durable installations in real user environments.

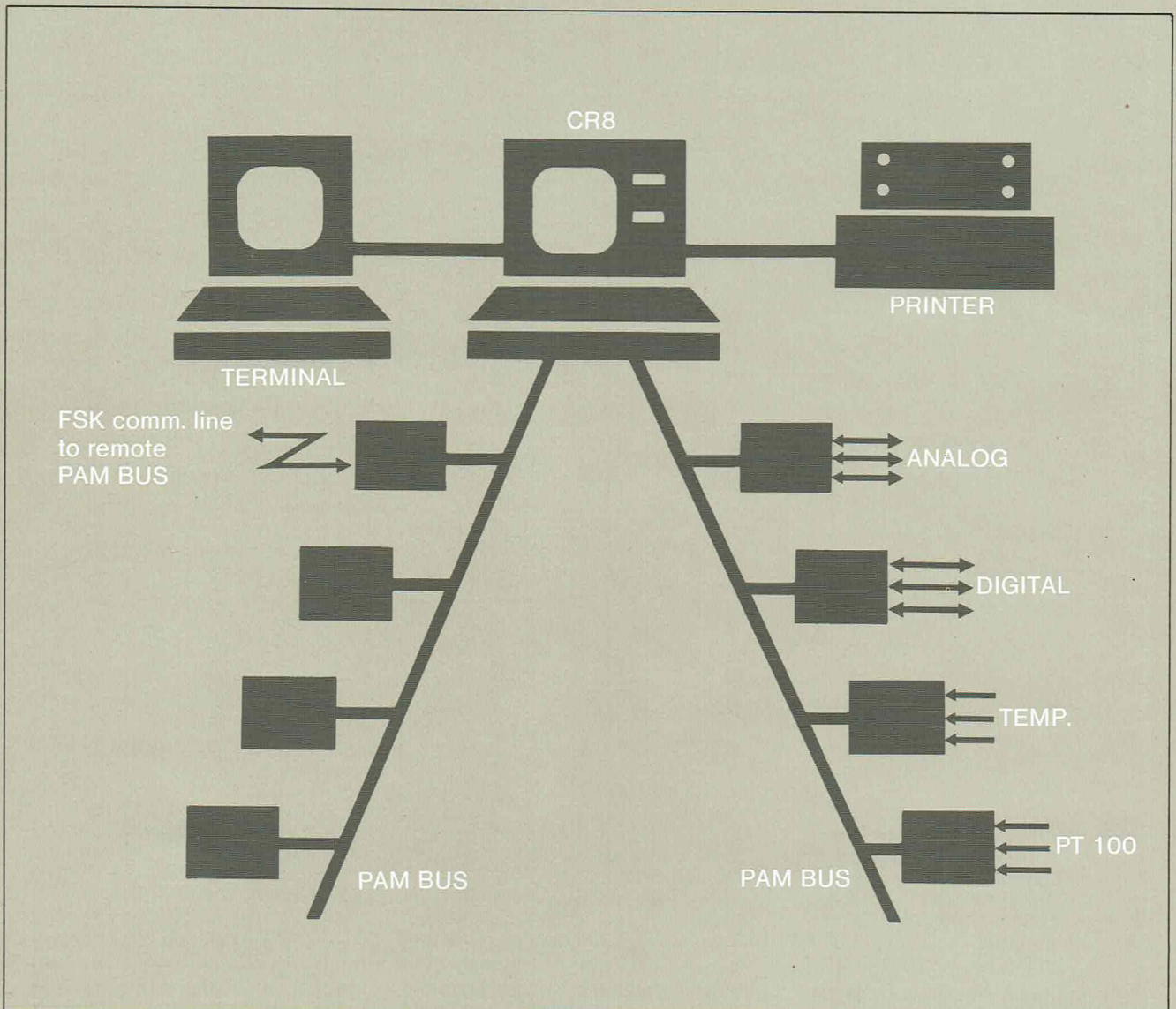


PAM Data Acquisition and Control

- Dramatically reduced installation cost by twisted pair wiring (length of each PAM bus up to 4 km).
- Process monitoring and industrial control
- Production supervision and control
- Building and energy management system
- Sewage treatment and water supply systems
- Security and surveillance

The PAM system makes it possible to place sturdy, encased interface modules in the immediate vicinity of the measuring or control points. Up to 2×80 process interface modules and the CR8 can also be interconnected by using a common 2 wire cable connected to a single position Multimodule dual PAM bus driver board - plugged directly on the MP-square board in the CR8. The 2 wire cable is used for data transmission

as well as for power distribution to the modules at distances of up to 4 kilometers. Each PAM module interfaces 1 to 8 process points.





The CR8/PAM combination allows two-wire communication with PAM Data Acquisition and Control modules.

CR8 attached to X-Net (Local Area Network) in an office environment.

Specifications

CR8 standard models

	CPU(s)	Multuser capability	Basic RAM included	Serial I/O ports	Floppy disk controller	Packaging	Free Multibus card slots	Peripheral storage
CR8/004	Z80A	no	64 Kbyte	2	yes	Cabinet	3	Opt-01-31
CR8/005	Z80A	yes (4)*	128 Kbyte	2	yes	Cabinet	3	Opt-01-31
CR8/007	Z80A, 8088	yes (8)*	128 Kbyte	2	yes	Cabinet	3	Opt-01-31
CR8/014	Z80A	no	64 Kbyte	1	yes	Workstation**	4	Opt-01-31
CR8/015	Z80A	yes (4)*	128 Kbyte	1	yes	Workstation**	4	Opt-01-31
CR8/017	Z80A, 8088	yes (8)*	128 Kbyte	1	yes	Workstation**	4	Opt-01-31

* Opt-97, SCI, one for each 4 users

** Indicate type by suffix letter V or A after standard model No. (e.g. CR8/015V)

V: VT 100 compatible, as illustrated A: ANSI compatible, not illustrated, economy model, 1 less free card slot (4th quarter 1982)

List of options

Options	Multibus slot(s) required	Description
Opt-93	1	128 Kbyte memory board
Opt-94	1	256 Kbyte memory board
Opt-97	1	SCI-board, 4K universal serial comm. I/F (V24/RS232, X21, current loop) incl. on board Z80A and 32K RAM.
Opt-00		Single Floppy drive, 5 1/4", 256 Kbyte
Opt-01		Single Floppy drive, 5 1/4", 1 Mbyte (dual side, dual density)
Opt-10		Dual Floppy drives, 5 1/4", 2 x 256 Kbyte
Opt-11		Dual Floppy drive, 5 1/4", 2 x 1 Mbyte (dual side, dual density)
Opt-21	1	6.38 Mbyte Winchester disc + 1 Floppy drive (Opt-01) + Winchester disc controller board
Opt-31	1	12.76 Mbyte Winchester disc + 1 Floppy drive (Opt-01) + Winchester disc controller board
Opt-40		Matrix printer, 80 cps
Opt-41		Matrix printer, 170 cps
Opt-42		Daisy wheel printer, 40 cps (letter quality)
Opt-45		Single sheet feeder for Opt-42
Opt-46		Tractor feed for Opt-42
Opt-47		Asynchronous, ANSI compatible terminal
Opt-48		Asynchronous, VT100 compatible terminal
Opt-49		Asynchronous, VT200 compatible terminal (Tandberg)
Opt-200		CR8 CP/M 86 (8088) operating system, single user
Opt-201		CR8 MP/M 86 (8088) operating system, multi user
Opt-202		CR8 CP/M 80 (Z80) operating system, single user
Opt-203		CR8 MP/M II (Z80) operating system, multi user
Opt-60		FORTRAN compiler
Opt-61		BASIC
Opt-62		PASCAL compiler
Opt-63		COBOL compiler
Opt-64		WORDSTAR TM
Opt-65		SPELLSTAR TM
Opt-66		CALCSTAR TM
Opt-67		DATASTAR TM
Opt-68		VISICALC TM
Opt-69		SUPERSORT TM
Opt-70		MILESTONE TM
Opt-71		MAILMERGE TM
Opt-72		WORDINDEX TM
Opt-73		MDBS TM Database System

Indicate CPU type by suffix letter Z or I to Opt-No. (e.g. Opt-61 Z)
Z: Z80A
I: 8088

PAM moduls

PAM 310: 1 digital input (alarm)
PAM 320: 8 digital inputs (alarms)
PAM 325: 8 digital inputs (opto)
PAM 330: 7 digital outputs
PAM 335: 8 digital outputs
PAM 340: 1 digital input + 1 digital output
PAM 345: 4 digital inputs + 3 digital outputs
PAM 351: 8 analogue inputs, 0-20 mA
PAM 356: 8 analogue inputs, 0-10 V
PAM 360: 1 analogue output, 0-20 mA
PAM 371: 8 analogue inputs for Pt-100 sensors
PAM 372: Room temperature monitor with built-in sensor
PAM 372D: Room temperature monitor with built-in sensor + 2 digital inputs and 2 digital outputs
PAM 373: 7 analogue inputs for thermo-elements

PAM 375: 1 pulse frequency input
PAM 380: ID-card reader
PAM 390: PAM-FSK transceiver for telephone lines
PAM 395: Base station and PAM I/F for intelligent (microprocessor based) hand terminal.



MULTIBUS, 8088, ISBX, Multimodule - trade marks of Inter Corporation

Z80 - trade mark of Zilog Corporation

CP/M, MP/MII, CP/M86, MP/M 86 - trade marks of Digital Research

Wordstar, Calcstar, Spellstar, Datastar, Wordindex, Supersort, Mailmerge - trade marks of Micropro International

Visicalc - trade mark of Visicorp TM Personal Software

Milestone - trade mark of Organic Software

MDBS - trade mark of Micro Data Base Systems, Inc

DEC, VT 100 - trade marks of Digital Corp.

Our products are under continuous research and development. Any information may therefore be changed without prior notice.

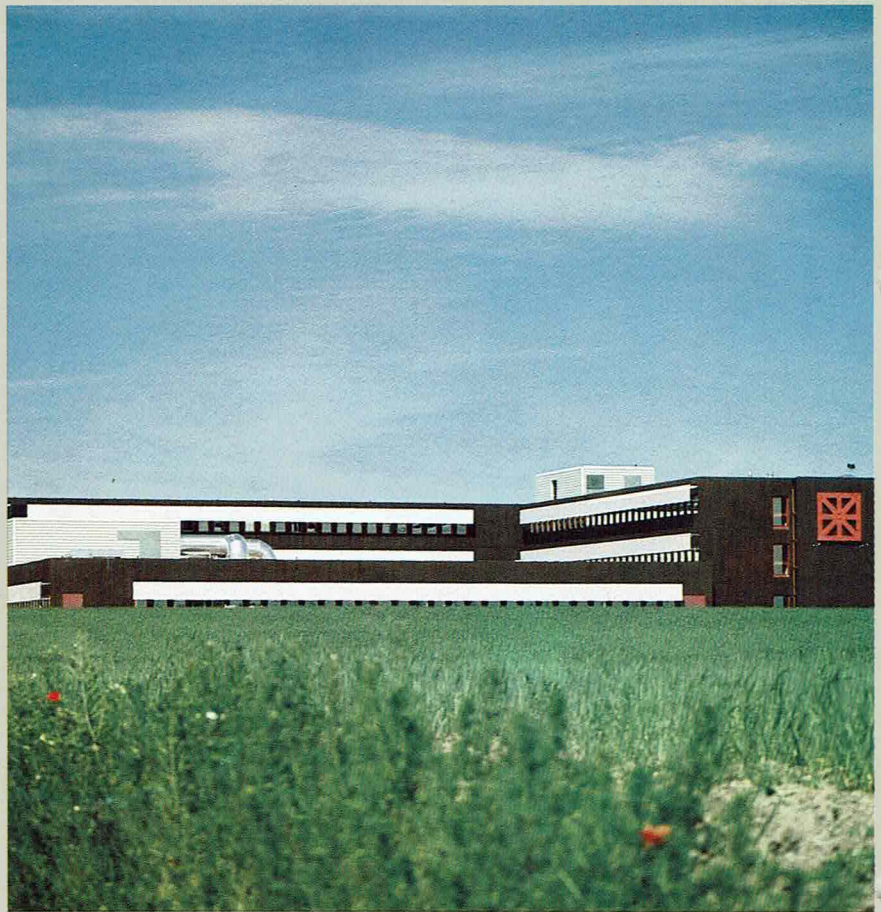
Corporate profile

Christian Rovsing A/S was established in 1963, and today is one of the fastest growing European computer manufacturers, with offices in the UK, USA, Canada and Holland. The company employs a staff of over 800 and has an annual growth rate exceeding 30%.

Christian Rovsing A/S designs, manufactures and markets data communications equipment and networks based on the company's own mini and microcomputers. The products are delivered and used worldwide on a broad range of applications including commercial as well as defence communications systems and networks. Other product areas covered by the company include Local Area Networks, Office Automation systems, Aerospace Electronics and commercial EDP systems.

To help you capitalise on all Christian Rovsing A/S' products, we provide comprehensive customer support and maintenance. A wide range of training courses are also available at our headquarters. On-site courses may be arranged at your request.

For further information please contact Christian Rovsing A/S, Denmark or your local office.



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