

990 Computer Family Software.

JUN 19 1976

TEXAS INSTRUMENTS.



For Your Bigger Systems.

DX10 Disk System Software for major commercial and industrial applications.

Your larger systems need the support of a powerful performer. The star: DX10 Disk System Software.

A user-oriented, general purpose, multitasking operating system, DX10 is a versatile performer. It's designed to be easily configured for a wide range of roles. From commercial to industrial to OEM applications.

DX10 means support for your business applications. With features like COBOL or Business BASIC, complete Sort/Merge package, and multiterminal or batch operation, DX10 is the ideal business performer.

DX10 means support for your industrial systems. FORTRAN IV with ISA extensions for process control, 990 BASIC, Macro Assembler, plus the direct single-bit access I/O architecture of the 990 Communications Register Unit are all offered to tailor DX10 to an industrial role.

DX10 capabilities support OEM users, too. Its program development utilities include Interactive Text Editor, Macro Assembler, Link Editor and Debug packages. Particularly useful to the OEM are the faster, more powerful, disk-based development features that can be used to develop applications to execute on smaller 990 family members.

One of the most attractive features of the DX10 system is its ease of user operation. Interactive or batch commands to the system are interpreted in a special-purpose high-level language by a System Command Interpreter. Prompting can be selected or omitted depending on the experience of the user. For specific applications, user-developed custom commands can also be added.

DX10 features a File Management package that dynamically allocates file space. The File Management package includes a complete set of access features; multi-level directories and a choice of sequential, relative record, or key-indexed file types. In addition, dynamic memory management provides automatic roll in/roll out, and overlay capability.

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Outstanding Performance on a Lower Budget

TXDS Floppy-Based System Software for medium-scale system development or OEM target systems.

For users who need assembly language or FORTRAN IV software development and randomaccess file storage—but who cannot justify the cost of a moving head disk—there's another star in the wings. TXDS Floppy Disk System Software.

The TXDS system provides two packages in one combining a multitasking executive (TX990), which includes floppy file management, with a complete software development system. And the TX990 executive can be used with TXDS, or alone as a memory-resident target system.

All the software required to conveniently develop and maintain assembly language application programs is provided with the TXDS program development system. These include the Text Editor, Assembler, Cross Reference, Linker, File Copy/ Concatenate and Standalone Debugger. TXDS FORTRAN IV provides additional program development capability in an easy-to-use high-level language.

TXDS provides microprocessor design features, too. Utilizing the optional PROM programming hardware unit, TXDS can be used to assemble,



edit, debug, and burn programs into PROMS or EPROMS. TX990 also provides a host system for the AMPL^{*} Microprocessor Prototyping Lab.

TX990 Executive plays a dual role.

When not supporting TXDS as the system executive, TX990 utilizes its own versatile features to provide a memory-resident target system for applications developed with TXDS or DX10 system software.

The TX990 executive includes standard features such as task scheduling, interrupt handling, I/O processing, supervisor call processing and operator communications.

In addition, TX990 contains floppy-disk file management for sequential and relative record files. A complete set of file features and utilities are provided. TI's higher data density floppy format and conversion to IBM format are supported. File space allocation, blank compression and blocking/deblocking are automatic.

A user-oriented Operator Communications package is provided for those applications which require operator interaction.

Modular organization allows TX990 to be tailored easily by linking together only the system modules required for a specific application—a feature which saves memory cost.

EX990 Memory-Resident Software for dedicated applications.

Even the smallest role can call for a top performer. TI's EX990 Operating System fills the bill.

*Trademark of Texas Instruments

Inexpensive enough for the simplest tasks, EX990 is a basic memory-resident, multitasking executive designed for dedicated applications based on the TMS 9900 microprocessor. It requires as little as 1000 bytes of memory and supports ROM/ RAM partitioning of both applications and EX990 system code.

EX990 is provided in source code and includes extensive documentation for developing alternate or additional EX990 modules.

And there are system commands to assist in checking and debugging programs as well as other standard system functions.

EX990 executes on any member of the 990 Computer Family or on OEM systems based on the TMS 9900 microprocessor. DX10, TXDS or the PX990 Prototyping System are used for software and firmware development.



990 Software offers a choice of the most useful high-level language options.

A complete cast of high-level languages is available for the 990 user. For the DX10 system,

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COBOL, FORTRAN IV, 990 BASIC, and Business BASIC are options. For the TXDS System, FORTRAN IV is supported.

Each of these languages contain full features. FORTRAN IV includes TI and ISA extensions to the ANSI X3.9-1966 standard. COBOL conforms to the ANSI level 1 subset X3.23-1974 with added TI extensions. And 990 BASIC is an extended version of the classic Dartmouth BASIC. In addition, a Sort/Merge utility is available for use with DX10 high-level languages which provides full, address, key, and summary sorts plus merges on up to five input files.



For Your Microprocessor Development.

PX990: our low-cost microprocessor prototyping system.

For developing small-scale 990 assembly language programs for either ROM or RAM applications, the cassette-based, memory-resident PX990 is a low-cost performer.

Software is included to assemble, edit, link, and debug assembly programs. And once programs are verified they can be burned into PROM or EPROM with the optional hardware PROM Programming Unit. Programs also can be generated in BNPFformatted output.

The AMPL Lab makes microprocessing design easier for you.

TI's AMPL Microprocessor Prototyping Lab extends the talents of the TXDS System Software to facilitate straightforward prototyping design, implementation and verification of TI microprocessors. The AMPL Lab offers full microprocessor in-circuit emulation and a general purpose logic state trace analyzer as optional hardware, both controlled by the AMPL high-level, interactive control language. Designed-in features of the AMPL language simplify orientation of the new user while providing versatile support for the more experienced.



Performances to Fit Your Budget.

TI software is designed to fit a variety of configurations.

A broad range of peripherals is supported by 990 Computer Family Software to meet your requirements. Basic system configurations range in price from less than \$1,500[†] for EX990 Software and a 990/4 Microcomputer, to a fully packaged DX10 system including DX10 software and all the required disk-based hardware for under \$30,000[†].

The best performance in a supporting role.

TI believes after-the-sale support is a vital part of customer satisfaction. It's especially critical in software.

For all 990 software products, we provide comprehensive service and training. Every 990 software license includes □ field analyst support □ customer telephone support lines direct to the factory for consultation with specialized customer service engineers □ complete training facilities for our customers □ and one full year of software update subscription service to assure you have all the latest software improvements and enhancements.

Now that you know a little more about our range of software capabilities, let us know more about your needs. Contact Computer Systems Marketing at (512) 258-7305. Or call your nearest TI sales office.

†U.S. Domestic Price



Texas Instruments reserves the right to make changes at any time in order to improve design and supply the best product possible.



Star Performer in a Supporting Role. You've already seen TI's 990 Computer Family Hardware in the spotlight. And you know what to expect from it. <u>Performance that's superior and affordable.</u>

But 990 Computer Family Hardware isn't the only star in the family.

990 Family Software supports our hardware with powerful, versatile performance capabilities you get only from TI.

You get the kind of support a family of performers like the 990 deserves, whether your needs call for a 9900 microprocessor, a 990/4 microcomputer, or a 990/10 minicomputer.

You get support for a wide range of application requirements. From software for small standalone, multitask applications requiring only a few hundred words of memory. To software for medium-capacity, floppy disk-based applications. All the way to higher level languages for larger, disk-based applications.

And your 990 Family Software supports your future system requirements. With upward compatibility from the smallest to the largest member of the 990 Computer Family. So your system can grow without scrapping valuable software already developed.



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TI-443-10M-9/77