

Digital Scientific®

Digital Scientific Corporation
11455 Sorrento Valley Road, San Diego, California 92121
Telephone (714) 453-6050



COMPUTER
SYSTEM



The Digital Scientific META 4® Computer is a flexible, logical processor controllable by a microprogram stored in a random-access, user-alterable, very high-speed Read-Only Memory (ROM). The system architecture is designed to allow the user great latitude in generating a microprogram to meet his specific needs. The META 4 Computer executes each microprogrammed instruction in only .90 nanoseconds. This speed, coupled with the extremely versatile architecture and the field-alterability of the ROM make the META 4 a very powerful tool. Some applications of the META 4 which demonstrate its utility are:

- Exact Emulation of the IBM® 1130 and 1800 Computer Systems, executing existing IBM software at more than twice the speed of the original systems.
- Exact Emulation of the Control Data 160-A Computer System, executing existing CDC software at more than twice the speed of the original system.
- Large-Scale, Special-Purpose, Multiprocessor Computer Systems.
- Emulation of the IBM System/360 Peripheral Controllers.
- Interactive Graphics Computer-Aided Design System.

Digital Scientific has a large selection of microprograms, software programs, and hardware options available for user application. For example:

MICROPROGRAMMING

- ■ IBM 1130 Emulation • ■ IBM 1800 Emulation • ■ Control Data 160-A Emulation
- ■ FORTRAN Floating-Point Arithmetic Subscript Calculation Instructions to replace software subroutines • ■ Fast Fourier Transform (FFT) Instruction

SOFTWARE PROGRAMS AND TRANSPARENCY

- DSC META 4 System Microprogramming Utility Package ■ DSC META 4 offers compatibility with all programs in the IBM 1130 and 1800 Program Library (program types 1 through 4)
- Disc Monitor (DM-2) ■ Multiprogramming Executive System (MPX) ■ Time-Sharing Executive (TSX) NOTE: IBM program products are available from IBM.

HARDWARE OPTIONS

- ■ 900-nanosecond Magnetic Core Memory (up to 65K 18-bit directly addressable words)
- ■ Multi-Bank and Multi-Port Core Memory Capabilities
- ■ Read-Only Memory (ROM) Modules (up to 4096 16-bit words)
- ■ Hardware Registers (up to 32)
- A Complete Line of Standard Peripheral Devices
- Synchronous and Asynchronous Communications Adaptors
- ■ Scratch-Pad Memory (64 16-bit words with a 200-nanosecond cycle time)

SYSTEM ADVANTAGES

- For routine data processing or data acquisition and control applications, the META 4/1130 and META 4/1800 Computer System Emulators offer dependability, high performance, and economy.
- Unique applications requiring special hardware/software solutions can be resolved simply — yet in a more sophisticated manner — by application of META 4's flexible microprogramming and architecture. The solution costs less and performance is better than through conventional computer means.

FOR FURTHER INFORMATION, PLEASE CONTACT **Digital Scientific.**

DSC has offices in principal cities across the country.



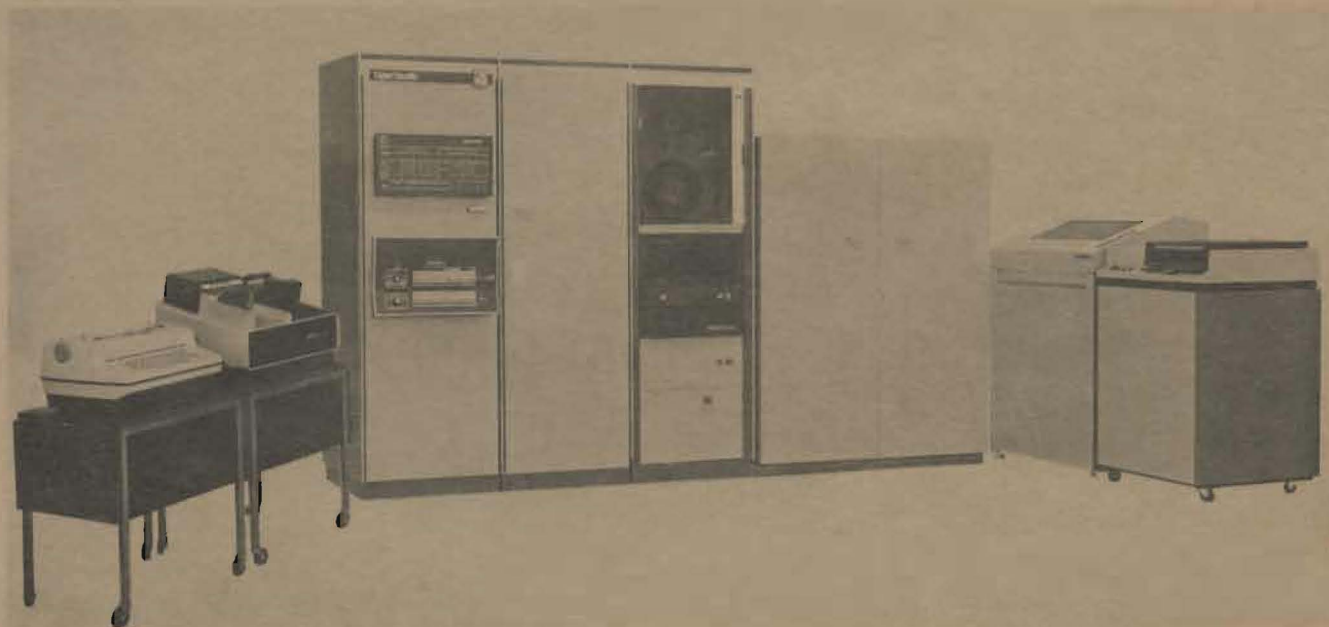
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MODEL 4040

COMPUTER
SYSTEM



The Digital Scientific META 4[®]/1800 Computer System, Model 4040, is a state-of-the-art micro-programmed emulation of the IBM[®] 1800 Data Acquisition and Control System. Some of the outstanding features of the META 4/1800 are:

- Exact Emulation of the IBM 1800 Instruction Set (plus 8 additional Register-Register and Register-Immediate instructions not available in the IBM 1800).
- Total software transparency (permitting direct replacement without reprogramming).
- Ability to interface to user or IBM equipment via the selector or external I/O channel.
- Provisions for customer added instructions and/or subroutines.
- Optional microprogrammed subroutines.
- Improved throughput at lower cost.
- Vast library of available software.
- Requires less floor space.

The DSC Model 4040 provides the basis for an IBM 1800 system replacement. Optional items such as specific core requirements and various I/O devices must be added. This resultant system is totally transparent to the existing IBM software, considerably faster, designed to be smaller,

and provides the user with the ability to upgrade his existing capabilities by incorporating his own microprograms.

Digital Scientific has a large selection of firmware programs, software programs, and hardware options available for user application such as:

FIRMWARE PROGRAMS

- IBM 1800 Emulation
- Fast Fourier Transform (FFT) Instruction
- Subscript Calculations (used by FORTRAN)
- Floating-Point Arithmetic (instructions to replace software subroutines)

SOFTWARE PROGRAMS AND TRANSPARENCY

- Time-Sharing Executive Operating System (TSX)
- Multiprogramming Executive Operating System (MPX)
- DSC META 4/1800 offers compatibility with all programs in the IBM 1800 Program Library (program types 1 through 4), except for certain time-dependent routines.

NOTE: IBM program products are available from IBM

HARDWARE OPTIONS

- Hardware Registers (up to 32)
- Multi-Bank and Multi-Port Core Memory capabilities
- A complete capability for Analog and Digital I/O Devices
- Read-Only Memory (ROM) Modules (up to 4096 16-bit words)
- A complete line of Standard Data Processing Peripheral Devices
- Scratch-Pad Memory (sixty-four 16-bit words with a 200-nanosecond cycle time)
- 900-nanosecond Magnetic Core Memory (up to 65K 18-bit directly addressable words)

SYSTEM ADVANTAGES

- Unique applications requiring special hardware/software solutions can be resolved simply — yet in a more efficient manner — by application of META 4's flexible microprogramming and architecture. The solution costs less and performance is better than through conventional computer means.

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1/3/73

CONTACT: Shirley J. Lewis, Advertising and PR
FOR RELEASE: At Will

San Diego, CA. A dual Digital Scientific microprogrammable META 4[®]/1800 Emulator Computer System, totalling nearly \$1/2 million, has been ordered by the Mayo Clinic, Rochester, Minnesota, for use in its Cardiology Laboratory. Due for delivery in March of this year, the DSC META 4/1800, which is hardware/software compatible with Mayo's existing computer system, will offer significant advantages in throughput, flexibility, and expandability to the Clinic. DSC's META 4/1800 is completely transparent to IBM software and, at Mayo, will operate under the MPX operating system. The META 4/1800 System for Mayo includes a complete line of peripheral equipments and controllers, digital-to-analog and analog-to-digital capability, and floating-point firmware.

18/30 system reference

GENERAL AUTOMATION, INC.
1055 South East Street
Anaheim, California 92805
(714) 778-4800

introduction 1

General Automation's 18/30 is a high-speed medium-scale computer. The 18/30 instruction repertoire is compatible with either the IBM 1130 or IBM 1800 instruction sets. Additionally, the 18/30 contains an extra set of register transfer instructions. Not only does the 18/30 provide IBM 1130 and IBM 1800 compatibility, but a substantial increase in throughput is achieved over the IBM counterparts.

Although the 18/30 is primarily requested as an IBM compatible replacement (because of substantial cost savings), the non-IBM user can use the machine for any of the myriad of uses for which medium-scale computers are designed.

The 18/30 is a sixteen-bit word machine, with available memory of up to 64K (K = 1024 words). Memory addressing is accomplished by several methods allowing a versatility of address generation. High-speed data registers provide a method for increasing the speed of arithmetic and logical operations, indexing memory addresses, and allowing Direct Memory Access (DMA) control of I/O operations.

This manual is designed as a hardware oriented reference manual for the 18/30. It contains detailed information concerning hardware system organization, the instruction set, Input/Output operations, and the operator's console. It is advised that the reader use this manual in conjunction with appropriate assembler and systems manuals for the particular installation. While all the information concerning the basic 18/30 is contained herein, the manual is organized for easy reference and not as an instruction manual. It is assumed the reader has a fundamental knowledge of how computers function.

Table 1-1 presents a summary of specifications for the 18/30.

CCT 1800 EMULATOR

A Turnkey Solution For Your IBM 1800 Replacement



CCT's IBM 1800 Emulator provides a turnkey replacement solution for the IBM Data Acquisition and Control System (DACS).

CCT's IBM 1800 Emulator provides a turnkey replacement solution for the IBM 1800 Data Acquisition and Control System (DACS). Originally designed to replace the IBM 1800 DACS for critical US Air Force applications, CCT's Emulator provides an exact functional replication of the IBM 1800 DACS. The Emulator provides full execution of the IBM 1800 instruction set and input/output operations. Execution times are precisely emulated so the IBM 1800 hosted software is 100 percent transportable to our Emulator without software modification.

Using mature state-of-the-art technology, our Emulator provides significant reliability and maintainability improvements over the original system's

design. The design of our Emulator incorporates extensive Built-In-Test (BIT) which isolates failures to the circuit card level. The use of present day technologies has produced an Emulator that requires far fewer piece parts to accomplish the functions of its predecessor and requires less than 10% of the floor space. Correspondingly, our Emulator provides a Mean-Time-Between-Failure in excess of 12,000 hours. CCT's Emulator is designed to allow users to select commercially-available off-the-shelf peripherals eliminating the need to be "tied to" a proprietary group of aging and costly peripheral units. CCT provides full logistics support for the Emulator and recommends appropriate support packages for each customer's configuration.

CCT PROVIDES

- FULL PRODUCT SUPPORT
- SYSTEM WARRANTY
- BENCHMARK TESTING
- INSTALLATION AND CHECKOUT
- MAINTENANCE
- TRAINING

CCT 1800 EMULATOR ADAPTERS

The modular design of our IBM 1800 Emulator also enables current IBM 1800 users to either upgrade portions of their systems (incrementally), or conduct a phased full scale system replacement.

Plug compatible with all existing IBM 1800 Systems, CCT's cadre of emulator adapters provides IBM 1800 user's the opportunity to replace their aging & unsupported equipment & peripheral devices with commercial off-the-shelf equipment without the need of software modifications all while maintaining your existing IBM 1800 system.

CCT's Card Reader/Punch Emulator



offers a state-of-the-art solution to the replacement of the IBM 1442 Card Reader/Punch unit. Plug compatible to existing IBM 1800s, our stand-alone Card Reader/Punch Emulator is comprised of two units: 1) a Control Console and 2) the Card Reader/Punch Adapter. The Control Console is an AT-class personal computer (PC) and display monitor. The PC provides the input/output medium for the card reader/punch function using either fixed or removable disks as selected by the console operator. During read operations, data stored on the disks is transferred to the IBM 1800 in punched card format. During punch operations, data received from the IBM 1800 is stored on the disks in punched card format.

The Card Reader/Punch Emulator contains self-test diagnostics that are initialized automatically upon power-up or manually initiated by the operator. The presence of a fault is indicated by the illumination of a FAULT indicator on the front panel. Faults are then isolated by indicators on each circuit card which identify the failed circuit.

CCT's Multi-Peripheral Adapter

(MPA) gives IBM 1800 users the ability to replace aging, costly and unsupported IBM 1800 peripherals with commercial off-the-shelf equipment without the need of software modifications. The MPA provides 14 serial (RS-232C) channels with nine selectable data rates from 300 through 19200 baud. The MPA also provides a parallel channel configurable to support either Centronics or Data Products interface protocols.



CCT's Disk Adapter

provides two SCSI (Small Computer Systems Interface) peripheral channels enabling off-the-shelf SCSI protocol devices to be added to the IBM 1800. Data transfers to or from each SCSI device are made under program (data channel) control of the IBM 1800. Data transfers between memory and peripherals are monitored for parity to ensure transfer accuracy. Additionally, the Disk Adapter contains 2 Mbytes (expandable to 4 Mbytes) of random access memory utilized as a data buffer.

CABLE & COMPUTER TECHNOLOGY, INC.

At CCT the corporate philosophy can be summarized in three words - "Commitment to Excellence". Our corporate commitment and dedication starts with adequate planning and a flexible organization which is adaptable to a changing environment, thereby providing superior products ahead of schedule at a reasonable price.



CABLE & COMPUTER TECHNOLOGY, INC.

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Cable & Computer Technology, Inc.

Company Profile

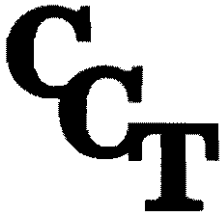
Cable & Computer Technology, C²T, is a Southern California firm specializing in the design and development of processor-based emulator, optical, and system controller designs. C²T designs, manufactures, and tests systems and equipment for militarized applications as well as the ruggedized and commercial equipment marketplaces. We are a company of dedicated and knowledgeable systems professionals able to attack a wide variety of computing application problems. For 17 years C²T has worked extensively with our customers to define and solve these problems. Our primary focus lies in the development of hardware and software for military and commercial computer systems used in mission critical applications including communications, navigation, radar and similar signal processing systems. C²T's reputation is established on our demonstrated past performance to develop quality products, surpass the requirements desired, and deliver products as expected, when expected.

The military avionics market has significantly narrowed with the limited number of new airborne weapons systems either under development or planned for the near future. The marketplace will continue to be dominated by companies with the ability to upgrade existing weapons systems so enhanced capabilities can be cost-effectively integrated to meet expanding mission requirements. C²T has proven its ability to design, development field highly cost-effective solutions within this highly competitive marketplace. Our website provides examples of two key C²T programs; namely, airborne mission computer upgrades for the **NAVY'S A-6E MEDIUM BOMBER** and the **AIR FORCE B-52H HEAVY BOMBER**.

C²T also has a well established position in the commercial marketplace. Our background began with the design of commercial products which are software transparent with the military equipment they replace. Since the company's founding in 1980, C²T has delivered over 40 software transparent replacement installations for a wide variety of hardware applications from complete computer systems to peripheral suites. The results have been the production of high-quality, high reliability hardware which is procurable, and supportable for a fraction of the cost of their original equipment. Examples are provided in **MIL-SPEC SYSTEM EMULATORS**.

C²T's computer emulation expertise has also been proven with replacement computer systems for the industrial marketplace where the cost of replacing, revalidating and reverifying proven operational software for critical applications presents enormous costs relative to the cost of the replacement hardware. The ability to precisely replicate the functional operation of specific systems so that the legacy software executes exactly as it did previously is a unique C²T capability unparalleled by any other company. **IBM-1800 DIGITAL CONTROL COMPUTER** provides an example of one of our programs where C²T designed, developed, manufactured and installed replacement computer systems for Canada's leading nuclear power generating facility.

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CABLE & COMPUTER TECHNOLOGY, INC.

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February 5, 2001

Mr. Steve Wixson
1060 Lower Brow Rd,
Signal Mountain, TN 37377

Subject: Request for Information on IBM 1800 Emulator

Mr. Wixson:

Please find enclosed a cut-sheet regarding CCT's 1800 Emulator. This system is presently in use in numerous power plant control and monitoring applications (both fossil-fuel and nuclear) as a turn-key replacement solution to for IBM 1800 hardware installations. CCT designs and manufactures a number of software-transparent design solutions for in-place hardware systems.

Should you need any additional information, you can contact me at 714.937.1341 or by E-Mail at starzyk@c2t.com.

Michael J. Starzyk
Director - Business Development



MICHAEL J. STARZYK
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