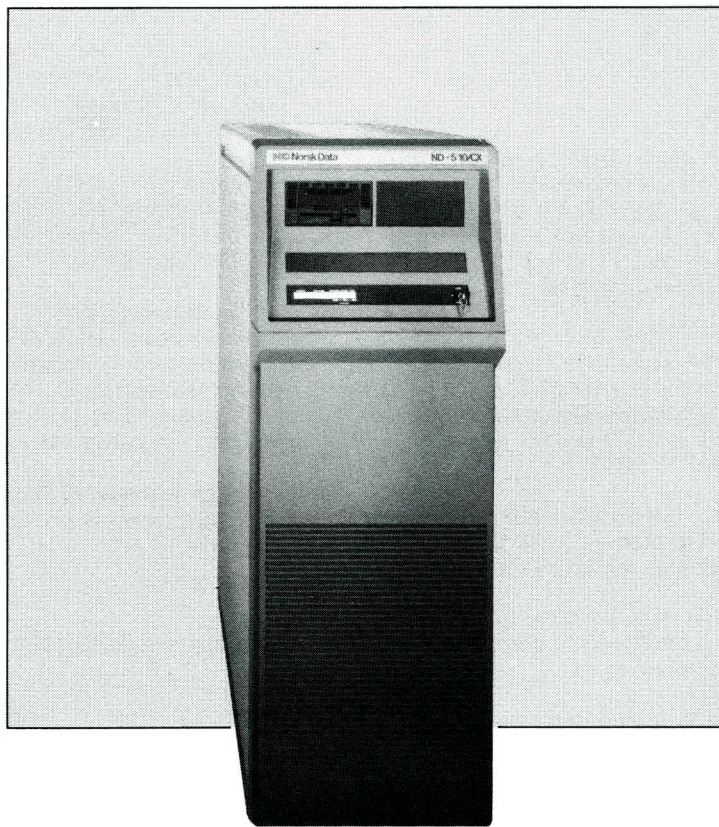


ND-510/CX COMPUTER SYSTEM

ND 5171



ND-510/CX Computer System

Introduction

Norsk Data's 510/CX computer is a low-end member of the ND-500/CX series, one of the most advanced 32-bit super minicomputer systems available. It accommodates exceedingly large programs and data areas, and fulfills the requirements imposed by most ADP and Office Support applications.

Features

- Single-cabinet configuration
- Advanced instruction repertoire
- Multiport memory system
- SINTRAN III operating system
- Multiprogramming capability
- Highly advanced processor technology
- 3MB memory, expandable to 8MB
- BCD Arithmetic

Product description

The ND-510/CX Model 21 is the newest, low-end model in the ND-500 series computers, fully compatible with the earlier ND-530/CX, ND-550/CX, ND-560/CX and ND-570/CX. Within these systems, each successive one is more powerful than the one that precedes it; and any system can be upgraded to a system with a higher performance.

The ND-510/CX Model 21 computer is housed in a single cabinet. It is based on the ND-500/2 32-bit CPU, and includes the Multiport V Memory System, the new ND-110 Front-End Processor, the I/O System and the SINTRAN III operating system.

The standard ND-510/CX configuration (ND 5171) includes an SMD type disk controller, a 1.2 MB floppy disk unit with controller and a console hardcopy terminal.

The necessary disk storage must be added, using a variety of storage modules from 70 MB or larger, in accordance with the configuration rules.

Operator interaction with the computer is facilitated by the Control Panel indicators. The panel consists of status indicators, a security lock, and indicators that show CPU and Cache memory utilisation. The Telefix adaptor is also built in, plus a printer outlet for hardcopy output of Telefix communication.

ND-510/CX Model 21 (ND 5171) comprises:

- 3 MB memory, expandable to 8 MB
- ND-110 I/O processor
- Fast TTL and LSI processor technology, providing a basic cycle time of 120 nanoseconds.

- Full BCD arithmetic and conversion processor providing high-speed COBOL programming. In addition, it provides 32-bit single-precision floating-point operations with a 23-bit mantissa and a 9-bit exponent. For 64-bit operations, the mantissa is 55 bits long.
- Byte-oriented instruction sets which are tailored for high-level program execution efficiency such as FORTRAN DO loops and COBOL string handling.
- A memory management system which allows each user an address space of up to 4.3 gigabytes for programs, and up to 4.3 gigabytes for data. This allows large files to be accessed as if they were arrays. Thus, the hardware memory management system accesses data rather than the more resource-consuming file system.
- The 32-bit CPU, which may be shared by many programs via the virtual memory system and the SINTRAN III Operating System. Context-switching routines are implemented in the microcode.
- A multiport memory system which allows shared and direct access to the CPU, the Front-End Processing unit, the DMA devices and the communication links (MEGALINK, HDLC).
- The Operating System – Norsk Data's interactive, terminal-oriented SINTRAN III. It allows many programs, written in different languages, to be executed simultaneously. Real-time tasks, local and remote batch jobs, and other forms of data communication may also run concurrently with the timesharing users.
- SINTRAN III version K – allows for larger system configurations, and especially a larger number of terminals.

Expansion possibilities

There are 13 free I/O slots in the basic system for peripheral controllers and interfaces. Any of the ND-110 system peripherals may be attached.

Of the ND-510/CX system's memory, 1 megabyte is local for the ND-110 Front-End Processing Unit. The remaining memory (2 megabytes in the ND-5161 standard configuration) is common to the ND-510 CPU and to the Front-End Processing Unit. The maximum shared memory size for the ND-510/CX Model 21 series is 8 megabytes, using 4-megabyte modules.

If more memory or additional I/O interfaces are needed, one of two expansion systems may be used. The I/O Expansion Cabinet (ND-5083) or the Memory and I/O Expansion Cabinet (ND-5084) will provide 18 extra I/O positions.

ND-510/CX Computer System

Software

The ND-510/CX Model 21 computer is delivered with the following software:

- SINTRAN III Operating System, including the ND-500 Monitor, Linkage-Loader and Symbolic Debugger
- Accounting System
- ND Backup System
- Test and Verification Programs
- SINTRAN III Utility Programs
- Subsystem Package
- ND Spooling System
- ND-500 Microcode, Multiuser
- Exception Handling
- User Environment
- Xmessage for SINTRAN III

Additionally, the following software is available:

Communications

- COSMOS, for communication between ND systems
- X.25 Network Option for PSS, TRANSPAC, DATAPAC, DATEX-P and other public networks
- X.29 PAD for terminal control through the X.25 Network
- X.29 SERVER to serve incoming PADs
- X.21 to access circuit-switched networks, e.g., the Nordic Public Data Network
- SNA for 3270 and RJE

Remote Job Entry Terminal Emulators and Terminal Concentrators

- IBM HASP-II
- IBM 2780/3780
- IBM 3270
- HONEYWELL GRTS-II
- HONEYWELL VIP-II
- CDC 200 User Terminal-Multidrop
- UNIVAC DCT-2000
- UNIVAC NTR
- UNIVAC UTS-400

Compilers and Programming Languages

- C
- PASCAL
- SIMULA
- ADA
- COBOL
- FORTRAN ANSI 77
- BASIC
- APL

Databases

- SIBAS Codasyl Database System
- ISAM Indexed Sequential File Access System

Editors, Word Processing and Information Processing

- PED Full-screen Program Editor
- NOTIS-WP Word Processor Software
- NOTIS-IR Information Storage and Retrieval System
- NOTIS-RG Report Generator
- NOTIS-CALC Spreadsheet System
- NOTIS-QL Query-By-Example Database Query and Update System
- FOCUS Screen-Handling System
- NOTIS-BG Business Graphic System
- NOTIS-ID Electronic Mail

Administrative Data Processing Tools

- FOCUS Screen-Handling System
- UNIQUE High-level Application Specification Tool
- ABM Applications Building and Maintenance for COBOL/FORTRAN
- MERCUR Financial Modeling

Technical specifications

The following dimensions apply to the CPU cabinet and its contents:

Height:	1.69 meters
Depth:	0.95 meters
Width:	0.60 meters
Weight:	approx. 180-250 kg
Operating temperature:	+ 10°C to + 35°C
Power consumption:	3500 watt max 230 volts ac 50 Hertz 1%

Documentation and related material

ND-500 Reference Manual	ND-05.009	EN
ND-500 Hardware Description	ND-05.011	EN
ND-500 Micro Programming Guide	ND-05.012	EN
ND-500 Array Processing Functions	ND-05.013	EN
ND-500 Test Microprogram Description	ND-30.013	EN
ND-500 Hardware Maintenance Manual	ND-30.014	EN
ND-500 Loader/Monitor Reference Manual	ND-60.136	EN
ND-500 Linkage-Loader User Guide	ND-60.182	EN

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