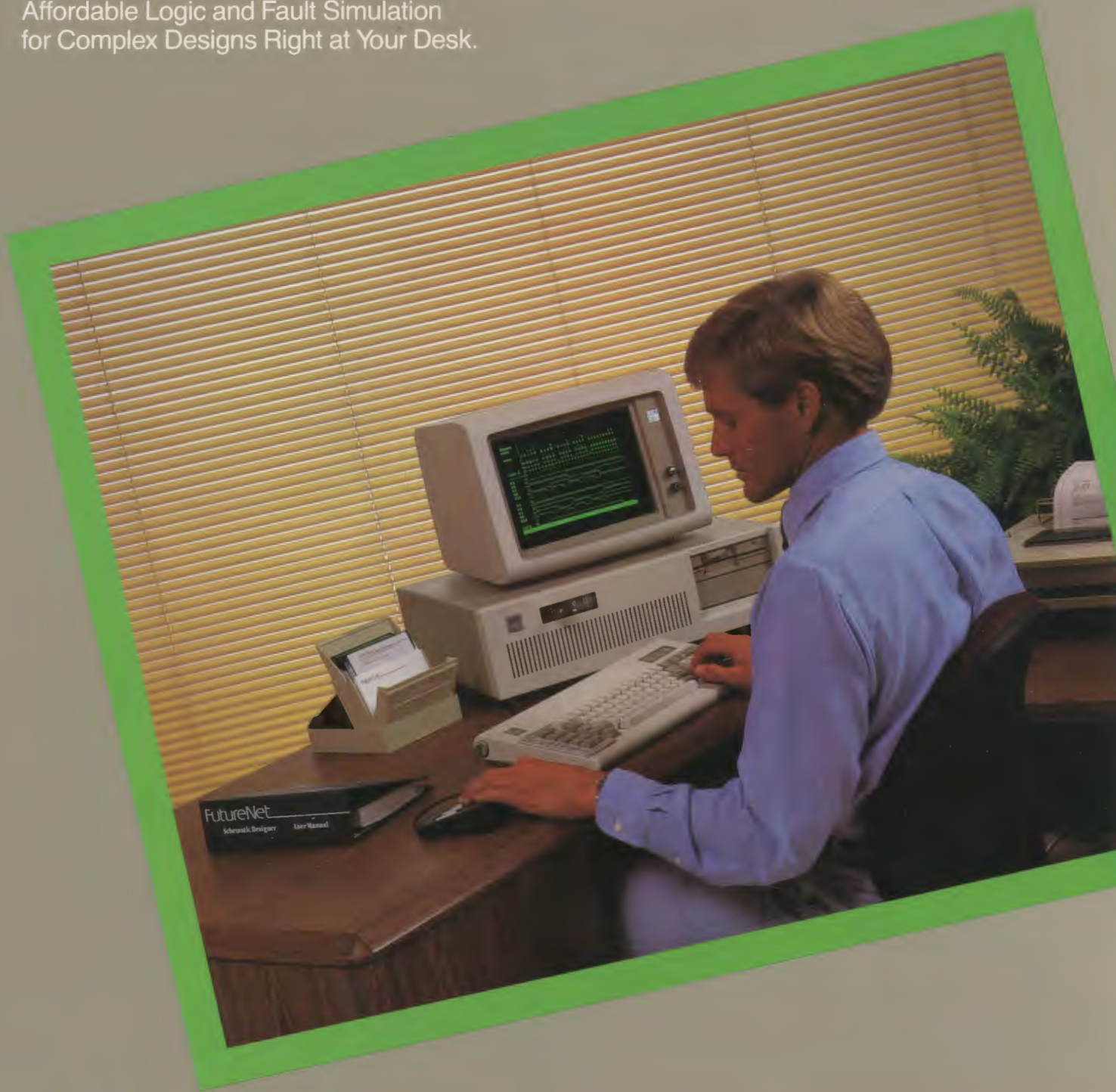
DASH™-CADAT

Affordable Logic and Fault Simulation
for Complex Designs Right at Your Desk.



FutureNet®

FutureNet — The Time Maker

FutureNet Does it Again!... With DASH-CADAT, an Affordable High Performance Logic Simulator

Another breakthrough from FutureNet. It's DASH-CADAT, the first high performance logic simulator for use on the IBM XT or AT. Now, right at your desk, you can achieve logic simulation capability previously available only on large mainframes costing ten times as much. And you can add our very affordable fault simulation option (FAULTSIM) which makes it simple to verify test vectors and analyze fault coverage.

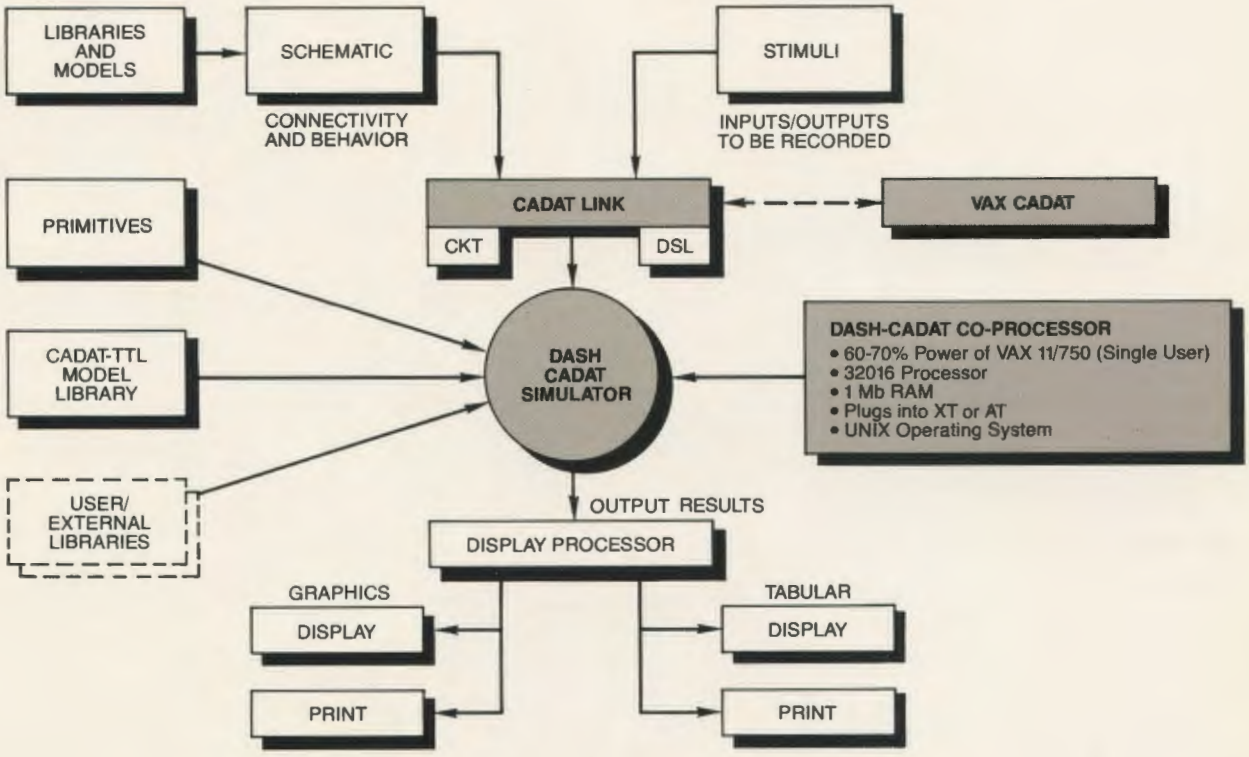
DASH-CADAT is tightly coupled with our popular DASH-1 and DASH-2 Schematic Designers, allowing effortless transfer of designs from schematic to simulation and test. The DASH-CADAT display processor allows you to review waveforms or tabular results of any captured simulation at any time.

DASH-CADAT is another proof of FutureNet's philosophy of expandability coupled with flexibility and outstanding price performance — vital considerations for any CAE investment made by a modern engineering department.

DASH-CADAT Advanced Features

- From a library of over 100 primitives, DASH-CADAT simulates ASIC (Application Specific Integrated Circuit) designs plus PCB designs using merchant parts. Further, many VLSI foundries have committed to support DASH-CADAT with specific simulation models.
- Menu driven for maximum ease of use and ready prompting of system options.
- Simulations of 10,000 gate circuits right at your desk on your IBM XT or AT. (Over 1 million gate equivalents can be handled using functional modeling.)
- Simulation runs on FutureNet's 32016 co-processor with 1 Mbyte of on-board RAM. Recommended 40 Mb plug-in Winchester disk drives available for IBM XT applications.
- Offers comprehensive fault simulation option (DASH-FAULTSIM).
- Displays simulation results in tabular or waveform modes, with hardcopy capability.
- True 12 state modeling, along with many MOS related features such as stored-charge/charge-sharing characteristics, assures accurate MOS and VLSI simulations.
- Fast, high resolution time definition to 100 picoseconds (0.1 ns).
- High level design stimulus language allows complete versatility in specifying simple or complex input stimuli.
- Can emulate ATE operations with multiple timing definitions.
- Small system requirements: Runs on IBM XT or AT with minimum 256 Kb RAM. Large system performance at low cost.
- Achieves 60% of the speed of a single user VAX 11/750 at about 1/10th the price.
- Full AT&T Bell UNIX 5 available.
- DASH-CADAT is event driven: Only changes in logic states require computation. At more than 200 events per second, DASH-CADAT is significantly faster than TEGAS, the most widely used logic simulator.

DASH-CADAT MAINFRAME PERFORMANCE IN YOUR PC



32-Bit Co-Processor Board Plugs into Your IBM XT or AT

Representing a major technological breakthrough, DASH-CADAT uses a powerful 32-bit co-processor board which plugs directly into your IBM XT or AT, making feasible a high performance simulator in a desk-top environment. No longer will you have to bring your data to a large mainframe to run accurate complex simulations. Think of the time and money you'll save.

Your IBM PC retains its original capability and flexibility. You can still run all existing PC software.

As with all FutureNet products, DASH-CADAT is easy to learn, has unbeatable price/performance, yet permits virtually unlimited upward growth. Larger versions of CADAT are available for mainframes like the DEC VAX and IBM.

No doubt about it, DASH-CADAT fits right into the goal of totally integrated engineering CAE tools and data bases.

DASH-CADAT Is an Integrated Tool

Here are still more reasons why small DASH systems achieve big results:

- DASH-CADAT libraries make designing and simulating as painless as possible.
- Circuit input to DASH-CADAT is easy with FutureNet's DASH software. No need for manual entry of circuit descriptions.
- DASH-CADAT does hierarchical simulation, taking full advantage of our STRIDES (Structured Interactive Design System) which lets you set up a drawing tree with up to 99 levels. Input to STRIDES is made without manual alteration to your circuit files, even with multiple sheet drawings.
- After completing the simulation run, you can review any captured data using the DASH-CADAT display processor at your leisure. No need to rerun the simulation to analyze specified results.

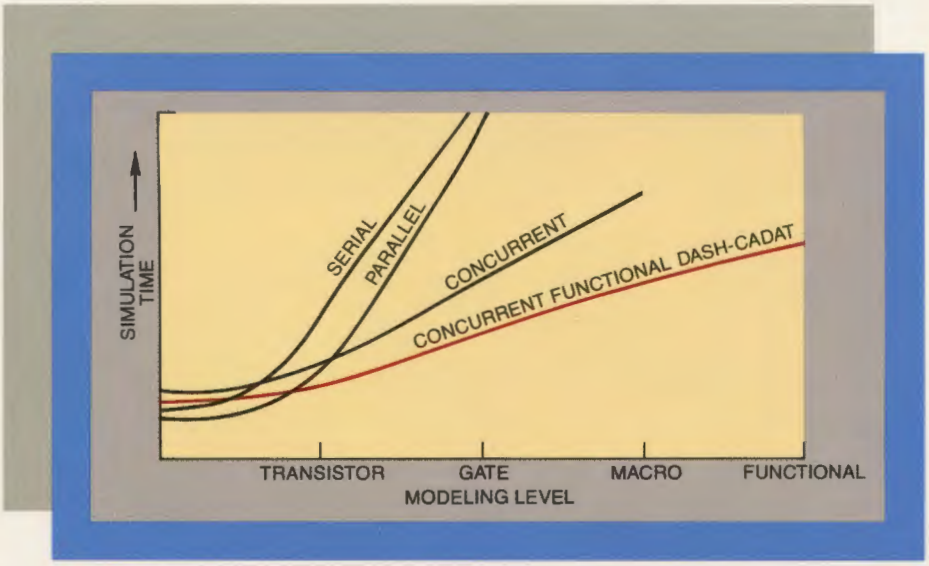
DASH-CADAT Is Upward Expandable

Like our DASH Schematic Designer, DASH-CADAT allows easy transfer of very large designs (up to 100,000 gates) to your mainframe for further processing. For example, circuit stimulus files created on DASH-CADAT can be loaded into mainframe CADAT. Mainframe CADAT and DASH-CADAT files are fully bi-directional. DASH-CADAT software is the same as used by mainframe CADAT, recompiled and ported to the DASH-CADAT co-processor for efficient desk-top use.

Large Library of Part Primitives and Tools

DASH-CADAT has an impressive library of over 100 basic part primitives: transistors, gates, registers, ALUs, ROMs, counters, decoders, multiplexers, transceivers and more, encompassing all popular modern technologies including TTL, ECL, CMOS, NMOS, PMOS and MOS.

In addition, our time-saving optional CADAT-TTL Designer's Model Library contains over 1200 merchant part macro models, ready for use. You can also develop your own models using the DASH-CADAT link translator (included). Already CADAT is one of the most widely recognized simulators for emerging VLSI technologies. CADAT and DASH-CADAT can handle all four types of circuit modeling: transistor level, gate level, macro level, and functional level, and combinations of each within one design. This ensures that you will not outgrow DASH-CADAT with future advances in technology and as your designs increase in complexity.



For simple circuits, any simulator technology will do an adequate job. As circuits increase in size and complexity, the DASH-CADAT concurrent functional algorithms quickly leave competing systems behind.

MODERN FAULT SIMULATOR TECHNOLOGIES

SERIAL	• Single Node • Entire Network • Low Overhead • Very Slow *Example:* DAISY
PARALLEL	• Multiple Nodes • Subdivides Network • Moderate Overhead • Faster • Works at Gate Level But Not at Higher Modeling Levels *Examples:* TEGAS, HILO
CONCURRENT	• Event Driven • Moderate Overhead • Faster Still • Effective at Gate or Macro Model Levels *Examples:* LASAR, ZYCAD, SILOS
CONCURRENT FUNCTIONAL	• Event Driven • Moderate Overhead • Fastest • Effective at All Modeling Levels • Allows Use of Functional Modeling • Up to 500 Nodes Per Pass with 1 Mb *Examples:* DASH-CADAT, Mainframe CADAT

SIZES OF SIMULATIONS

Modeling Level	Bytes/ Device	No. of Devices	Gate Equivalent Per Device	Net Simulation Size (Gates)
TRANSISTOR	75	9,333	0.25	2,333
NAND/NOR	75	9,333	1	9,333
D FLIP/FLOP	100	7,000	6	42,000
COUNTER, REG.	250	2,800	50	140,000
FUNCTIONAL	3,000	233	5,000	1,165,000

1 Mb Total RAM (300 Kb Used for System, 700 Kb Available User Memory). With any simulator, the size of simulation you can run depends on two things — the amount of available memory and the level of modeling you employ. DASH-CADAT allows all levels of modeling to handle the most complex designs.

Introducing DASH-FAULTSIM: State-of-the-Art Concurrent Fault Simulation

Once your logic design has been verified with DASH-CADAT, it's important to develop and check your fault detection test programs or vectors. DASH-FAULTSIM, a true concurrent functional fault simulator, is integrated with DASH-CADAT to help accurately determine fault modes and circuit testability. DASH-FAULTSIM can use the same circuit and stimuli files as DASH-CADAT, bringing design and test together in an integrated environment.

Here are DASH-FAULTSIM's main features:

- Allows grading of test vectors, to verify fault coverage and help optimize test programs.
- Analyzes faulted circuits and produces fault trace reports, a fault dictionary report, and a statistical fault trace report.
- Status display for viewing simulators. Real time status, e.g., faults remaining, pass number, step number, and total number of faults.
- Allows nodes to be "stuck at 0" or "stuck at 1" for permanent faulting of particular parts of a circuit.
- Records statistical results: solid detections, potential detections, fault oscillation detections, ratio of faults simulated to faults detected.

FutureNet takes care of you after the sale, too. For example, all DASH products come with an extensive 90 day warranty covering:

1. Any defects in hardware workmanship or materials;
2. Free telephone applications engineering support in the use of DASH products;
3. Free fixes in the event of "bugs";
4. Free application notes;
5. Free software updates released during the warranty period.

Low-Cost Extended Warranty

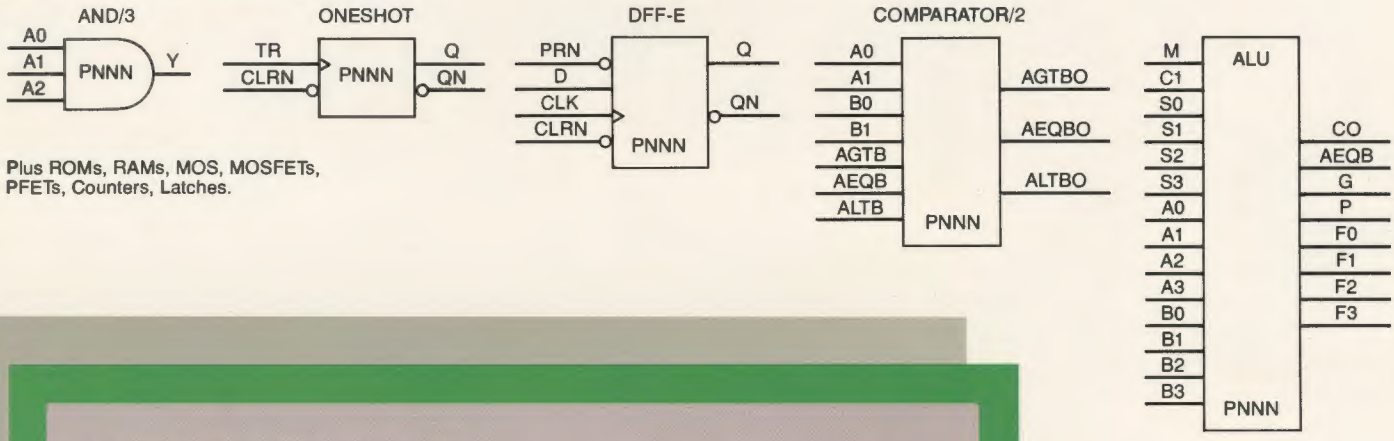
At time of purchase, you can buy low-cost hardware and software maintenance coverage which will automatically continue beyond the original 90 day warranty period. Your Maintenance Agreement Number then becomes your passport for support after expiration of the original warranty. In addition, you will also be kept up to date with the latest DASH-CADAT revisions and enhancements, and will continue to have available applications support and assistance.

With a Maintenance Agreement, you also receive free membership in the FutureNet's Users' Network (F.U.N.) and full no-charge access to the library of user-submitted programs.

Add DASH-CADAT and DASH-FAULTSIM to your FutureNet DASH system, today.

FutureNet — The Time Saver

DASH-CADAT: 100 PRIMITIVES



Plus ROMs, RAMs, MOS, MOSFETs, PFETs, Counters, Latches.

TYPICAL FAULT SIMULATION TIMES

Type of Simulator	SERIAL			PARALLEL			DASH-CADAT		
No. of Faults	3,000	15,000	30,000	3,000	15,000	30,000	3,000	15,000	30,000
Faults Per Pass	1	1	1	30	30	30	500	500	500
Number of Passes Required	3,000	15,000	30,000	100	500	1,000	6	30	60
Activity Level (%)	2	1	0.5	2	1	0.5	2	1	0.5
Total Time Required (Hours)	150	3,750	15,000	15	125	500	6.3	82	180

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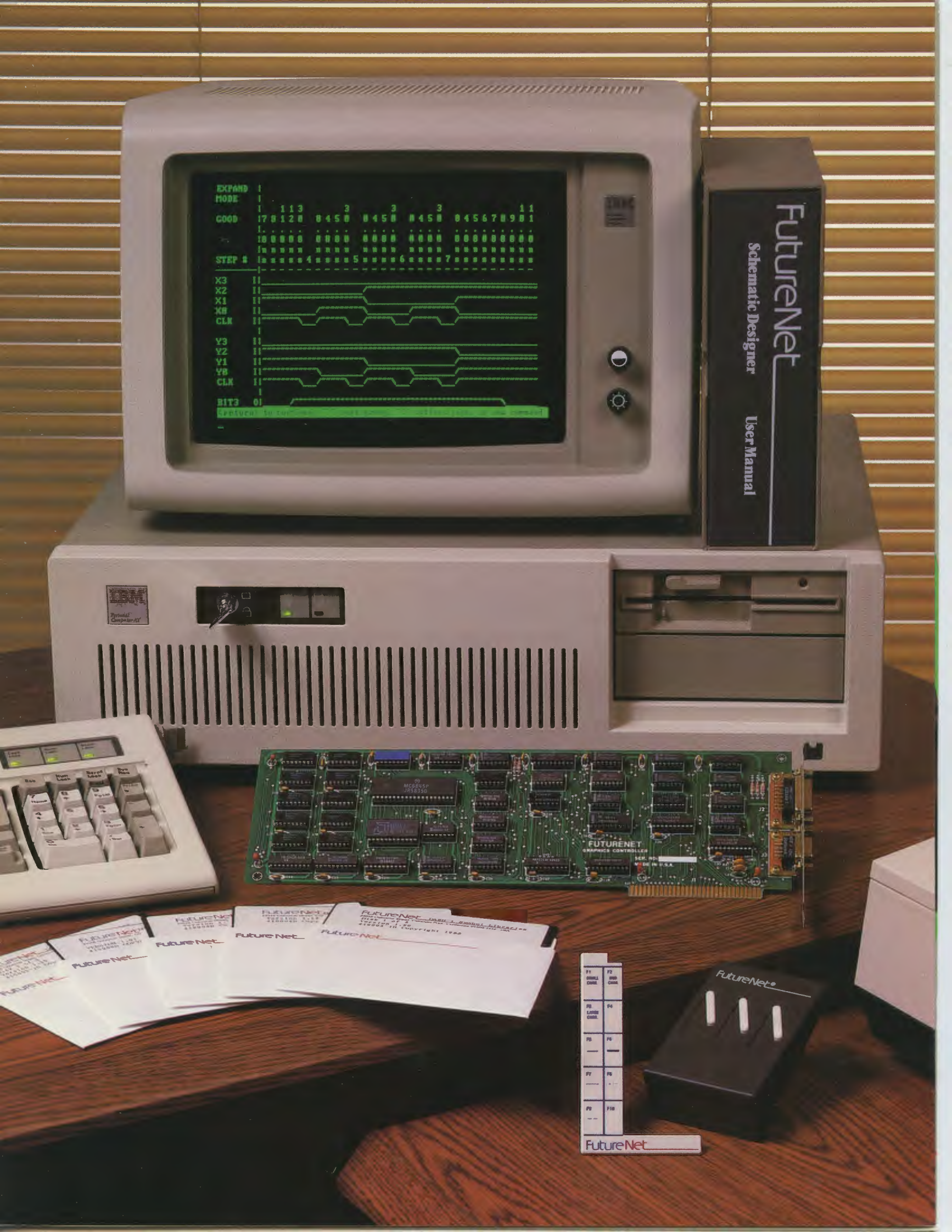
Many of the company and product names are registered trademarks.

Specifications subject to change without notice.

DASH-CADAT was developed under a licensing agreement with HHB Softron.


FutureNet
Schematic Designer
User Manual
EXPAND
MODE
GOOD
STEP #
X3
X2
X1
XB
CLK
Y3
Y2
Y1
YB
CLK
BIT3
FUTURENET
GRAPHICS CONTROLLER
FutureNet

Productivity of the Future… today.

FutureNet®

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