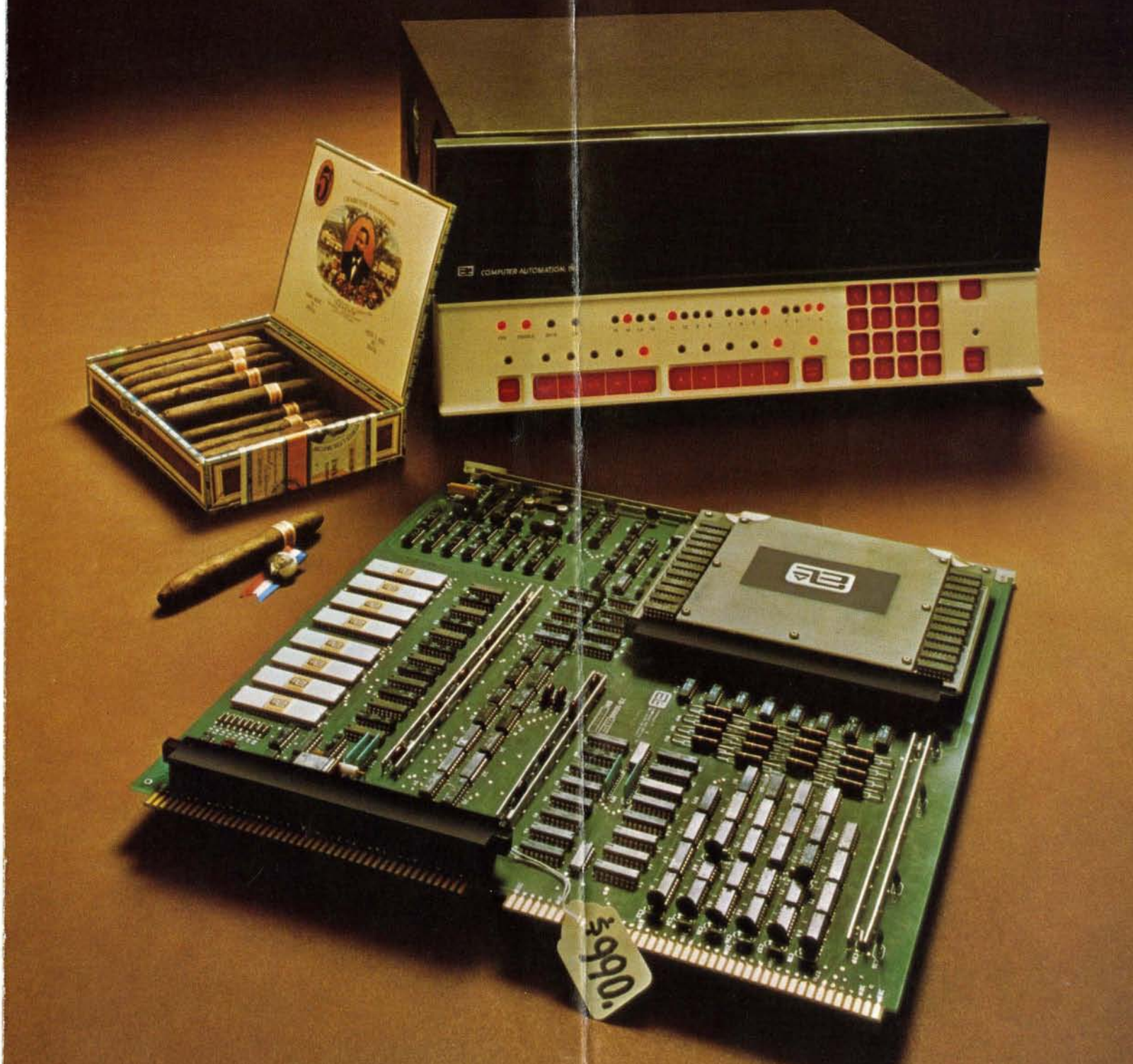
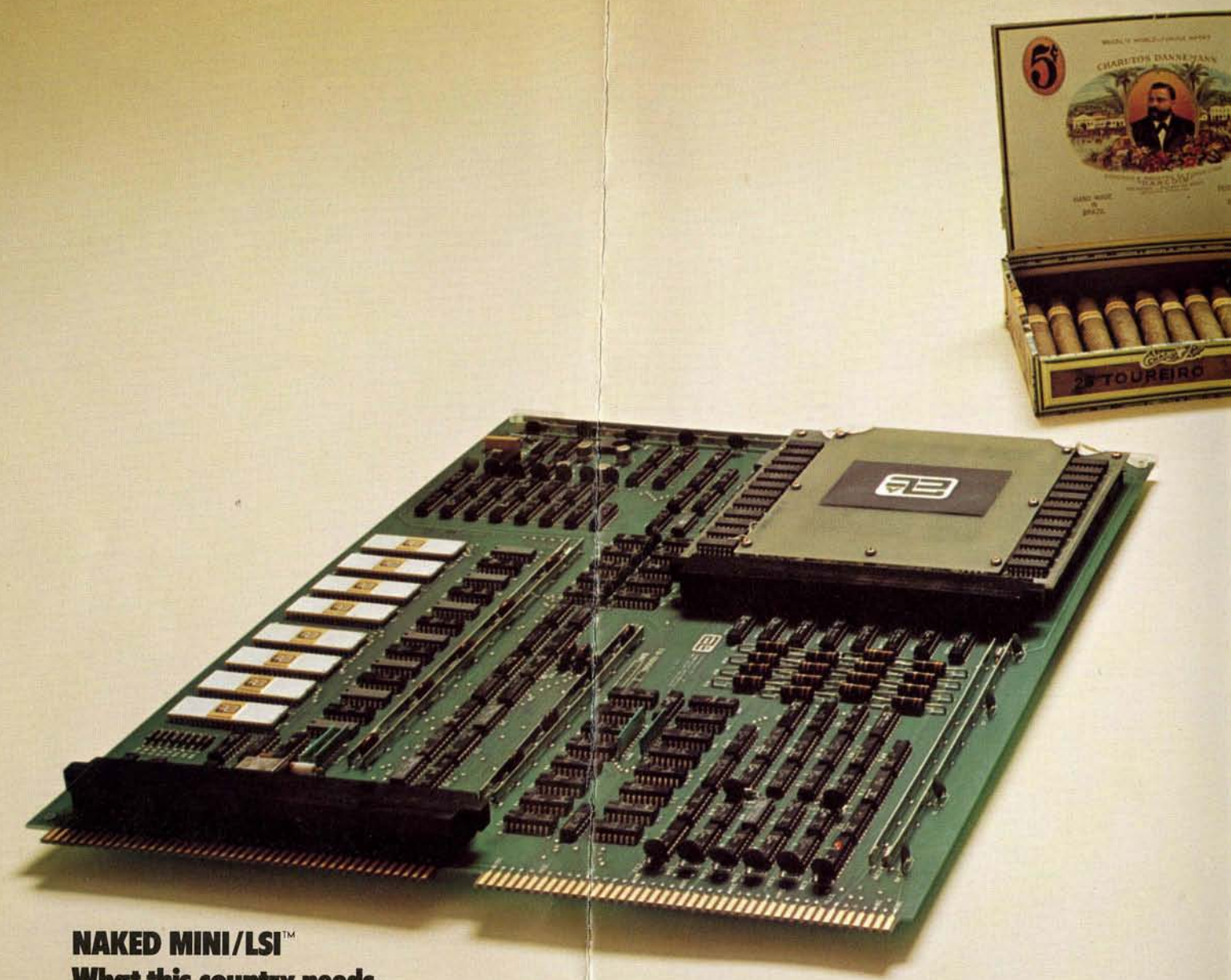
What this country needs is a good $1,000 full-scale computer.



NAKED MINI/LSI™



NAKED MINI/LSI™
What this country needs.

You're looking at the first full-scale, 16-bit computer to be designed for widespread OEM use.

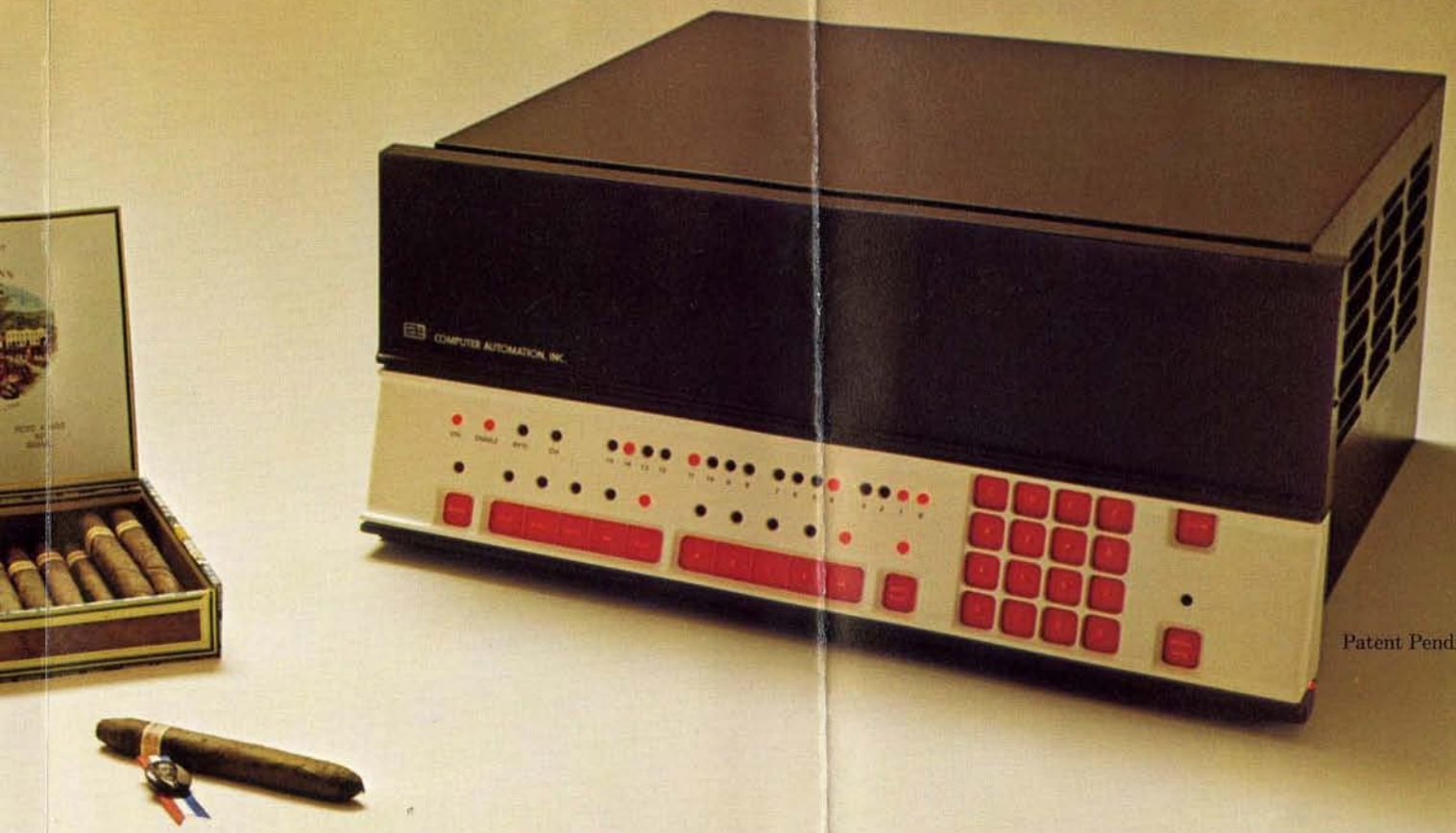
Widespread because we gave it an unheard of combination: big power to handle the toughest jobs, and a small price tag to handle a lot of jobs. Specifically, NAKED MINI/LSI is the first computer powered to satisfy 90% of all minicomputer applications—and yet priced as low as $990 in OEM quantities of 200.

Consider the possibilities. For the first time, there's a 16-bit general purpose computer offering every function of a minicomputer, but at less than microcomputer prices. Prices that make true computer power available to every level of use.

As a result, NAKED MINI/LSI will be going more places than computers could ever go before. Doing the job of expensive computers, but at much lower cost. Doing a better job than hardwired circuitry, yet at similar or lower cost. Even doing jobs that couldn't economically be done at all.

Consider the possibilities. Here's a fully operational computer that measures 1″ x 15″ x 17″ and weighs 4 lbs. The 7-chip MOS/LSI processor, 4K of memory, DMA, and full instruction set are all on a single card. There's no need for a chassis or motherboard, even to accommodate up to 8K of memory and all of the most common options.

It's truly the computer that's a component. To use it, just plug it into one connector in your product. It's powered by your existing system supply.



Patent Pending

One-on-one.

Imagine all the products you can bury the NAKED MINI/LSI in. All your products that can benefit from a computer having powerful arithmetic capabilities, full byte and 16-bit word processing, and extremely flexible I/O—yet costing less than most hardwired circuitry. All your products that will now be more competitive, more flexible, and immune to obsolescence.

The possibilities seem endless. NAKED MINI/LSI belongs in any system that needs to see that certain things happen in certain ways at specific times. NAKED MINI/LSI lets you plug-in the intelligence you need to monitor, sequence and control effectively.

For the first time, OEM's can think of using a computer for 1-on-1 applications: Smart terminals, key-to-disc data entry systems, automated bank tellers, delivery truck routing devices, continuous inventory control at fast-food outlets and other point-of-sale situations, information displays, communications concentrators, building security systems, laboratory instruments, patient monitoring systems, and classroom learning machines. Even vending machines and gas stations can now have their very own computer.

ALPHA/LSI™

If you need the NAKED MINI/LSI installed in its own fully encased mainframe chassis, we can do that, too. It's called ALPHA/LSI,™ and includes a power supply and a control console with a new hexadecimal data input keyboard and LED binary displays. It can easily be expanded to 256K words of 16-bit memory. And as many peripheral controllers and special-purpose interfaces as you need.

Why we did it: The Great OEM Gap.

Nobody else really understands the OEM.

Other minicomputer companies don't. They're busy building end-user systems with lots of peripherals, special features, and more speed and software than the job needs right now. The application is loosely defined and constantly changing. Someday the end user might—just might—need the extra goodies. And he's willing to pay fancy prices for them now.

The OEM, on the other hand, has a well-defined problem which changes slowly, if at all. He needs a computer powerful enough to answer his product's requirements, with enough

performance margin to accommodate the growth he expects in the future. Initial cost is important to him, since any savings are translated directly into profit. And because maintenance costs come right out of that same profit, he demands unfailing reliability.

Chip companies (so-called "micro-computers") don't really understand the OEM, either. They're producing do-it-yourself kits with weak instruction sets and limited logic that end up costing more than a NAKED MINI/LSI by the time you buy the memory and get the chips interconnected, functionally tested, and truly operating. And even after doing all that, you wind up with something which performs more like a smart calculator than a real computer.

After seeing this gap and listening to what OEM people really wanted, we knew the time was right for the NAKED MINI/LSI. Because of our specialized knowledge of the OEM, we were able to accurately define the needs of this forgotten market, while others didn't.

How we did it.

We didn't start out to design an LSI minicomputer.

Instead, we started out with one simple goal. To make the most useable OEM computer ever created. From this goal of useability came five criteria: 1) It had to perform every function of a full-scale 16-bit computer. 2) The CPU, memory and major options were to be on one board. 3) It had to be extremely reliable. 4) It was to be as fast as needed for 90% of the applications. 5) It had to sell in OEM quantities for under $1,000.

Out of these parameters came everything else. The use of 7 MOS/LSI chips to dramatically reduce cost of the CPU. The powerful 162 instructions to make the most efficient use of memory. An asynchronous Maxi-Bus™ with 58 parallel I/O lines for easy interfacing. The use of Programmed Logic Arrays, rather than ordinary ROM, to save main memory and processing time. The flexibility to use semiconductor RAM for smaller memory sizes and core for larger memories, and to mix them in any combination. Plus an 89% reduction in pin connections, for even greater reliability.

In short, the NAKED MINI/ALPHA LSI computers incorporate positive technical advances. Not trade-offs.

True, we made the computer a lot cheaper. But we also made it a lot better.

Specifications.

Memory

Word Size:	16 bits/word
Memory Size:	1,024 to 262,144 words
Cycle Time:	1.6 microseconds
Addressing:	Both word and byte

Functional

Instructions:	162 distinct basic instructions, plus many variations through address modes
Index Register:	Standard
Indirect Addressing:	Multi-level
Instruction Format:	Single word for almost all instructions
Processor Options:	Memory Parity; Power Fail/Restart; Real Time Clock; Autoload

Input/Output

Direct Memory Access:	DMA Standard; 625,000 words or bytes/sec.
Block I/O:	Standard; 131,579 words/sec.
Programmed I/O:	Standard; to 34,247 words or bytes/sec.
Direct Memory Channels (DMC):	Standard; 26,738 words or bytes/sec. total; multiple device capability without multiplexer
I/O Word Length:	8 and 16 bits
Priority Levels:	5 standard (2 internal; 3 external)
Interrupts:	Fully vectored; 6 standard; additional provided by all standard I/O options

Physical

Dimensions:	
NAKED MINI/LSI:	1.1" high, 15.0" wide, 16.9" deep
ALPHA/LSI:	8.7" high, 19.0" wide, 19.6" deep
Weight:	
NAKED MINI/LSI:	4.0 lbs. with full options
ALPHA/LSI:	88.0 lbs. with full options, power supply and panel

Environmental

Temperature:	0° to 50°C
Humidity:	90% (non-condensing)

Software

Real Time Executive (RTX) includes modular Input/Output (IOX) and Communications (COMX) subsystems
Disc Operating System
Magnetic Tape Operating System
Cassette Operating System
BASIC: both Advanced and Extended versions
FORTRAN
Conversational Assembler in addition to standard batch Assembler
Utility and Library programs
Quality Control Diagnostic (QCD) programs
File Manager
360 Cross Assembler

COMPUTER AUTOMATION, INC.
the NAKED MINI™ company

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