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# LITTON LC-728 Digital Computer

A computer meeting military requirements and offering high performance at low cost

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The LC-728 computer on the front cover, the arithmetic laminate above, and the CORCT memory module opposite are shown ACTUAL SIZE.



he Litton LC-728 is a low-cost, highperformance, binary, general-purpose digital computer developed to meet the requirements of cost-effective aerospace avionics systems. The memory, input-output controls, and arithmetic unit have been modularly designed in function and packaging. The computing speed, memory capacity, input/output assignments, and interrupt priorities are tailored to the specific application. The computer is EMIprotected and meets MIL-E-5400 (G) Class-2 environmental conditions. The computer has a two-instruction, twoaddress-per word format with a 28-bit word length. Negative numbers are handled in 2's complement binary form. Arithmetic and logic operations are generally performed in parallel on 4-bit bytes. The bytes are sequenced serially at a two-megahertz rate.

The LC-728 computer is completely microelectronic, using a combination of monolithic integrated circuits and flatpack microelectronic circuits. Transistor-Transistor-Logic integrated circuits are used for all logic elements. The flatpack microelectronic circuits are used for highpower and nonrepetitive circuits in the memory. Interconnection of basic logic elements is performed using multilayer laminates.

Instructions have been carefully selected to provide the necessary computing and processing capabilities at minimum cost. The machine has a total of 30 instructions, designed to form a compatible set of interrelated programming tools.

As the system application changes, the functions of the memory, input-output controls, and arithmetic unit are modified to save hardware and provide a cost-effective machine. For example, the high-speed-multiply instruction is included only when a high solution rate is required. Similarly, 32K of memory addressing capacity is available, but only the number of 4K modules actually required by the system problem need be purchased. Two 4K memory modules may be plugged into the basic unit; additional modules may be addressed, but must be packaged in a separate unit.

Litton's extensive systems design and management experience provides substantial benefits in the application of the LC-728. Comprehensive software is available for use on EDP equipment to help prepare the LC-728 computer program and to verify its correctness through detailed simulation. The LC-728 is designed with a self-test capability to provide the operator a continual high-confidence indication of the computer's status. For maintenance test purposes a Manual Control Unit has been developed permitting the operator to step the LC-728 through diagnostic programs and localize faults to a replaceable module. This unit also provides the means for loading programs into the computer memory.

Low cost, high performance and functional design modularity enable the LC-728 to fulfill the cost-effective requirements of any specific airborne application.

#### **CONSTRUCTION FEATURES**

- EMI protection
- Heat Exchanger cooling
- Rigid box-section structure
- "Space-qualified" multilayer printed circuit boards
- Minimum connector pins
- Tray wedge lock

## MAINTENANCE FEATURES

- High reliability using a minimum of components
- Wide component design tolerances
- Easy isolation of faults by self-test program to removable sub-assembly
- No special skills required for on-site repair
- Plug-in circuit trays and memory modules

## SPECIFICATIONS

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	4K MEMORY	8K MEMORY
ze eight olume ma I	12.56 in. × 10.31 in. × 7.62 in. 29.7 lbs 0.55 cu ft	36.5 lbs
Input voltage Input frequency Power consumption	115-vac, 3-phase, 4-wire 400 Hz 210 watts	250 watts
/pe II Input voltage Power consumption	28 vdc 165 watts	205 watts



# FUNCTIONAL CHARACTERISTICS OF THE LC-728 COMPUTER

WORD LENGTH WORD FORMAT OPERATION CLOCK FREQUENCY MEMORY SYSTEM

ADD TIME MULTIPLY TIME MODULAR FAST-MULTIPLY TIME DIVIDE TIME SPECIAL FEATURES: 28 Bits 2 Instructions per word Serial/parallel 2 MHz 4096-word DRO CORCT<sup>®</sup> module (modularly expandable to 32,768 words) 6 μsec 57.5 μsec (55-bit product) 18 μsec (39-bit product)

109 μsec (28 bits)
Power interruption recovery
Program and permanent data protection
Indirect addressing
Modular fast multiply (optional plug-in card)
Square root order
Real-time counter
Built-in modular power supplies accepting ac or dc
Extensive input-output capability

Buffered serial or parallel
Memory interleave

-External program interrupts

FOR FURTHER INFORMATION...WIRE 910-494-2091...PHONE 213-887-2162 OR WRITE DIRECTOR OF MARKETING.

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