

PRIME CENTRAL PROCESSOR SUMMARY

Central Processor Features

Central Processor Feature Availability	100		200		300		400		500	
	Std.	Opt.	Std.	Opt.	Std.	Opt.	Std.	Opt.	Std.	Opt.
8-channel programmable DMA system	✓		✓		✓		✓		✓	
32-channel programmable DMA system					✓		✓		✓	
Extended direct memory access (DMC, DMT)		✓		✓	✓		✓		✓	
Direct memory queue (DMQ)							✓		✓	
Full control panel	✓		✓		✓		✓		✓	
Unimplemented instruction trap	✓		✓		✓		✓		✓	
High-speed register file (32 addressable 16-bit registers)	✓		✓		✓		✓		✓	
Dual register sets (128 addressable 32-bit registers)							✓		✓	
8 general purpose registers									✓	
Hardware multiply/divide and double precision arithmetic		✓		✓	✓		✓		✓	
Automatic program loaders (standard devices)		✓		✓	✓		✓		✓	
Microverification routines				✓	✓		✓		✓	
Processor byte parity			✓		✓		✓		✓	
Memory byte parity			✓		✓		✓		✓	
Error correcting memory								✓	✓	
Single- and double-precision floating-point arithmetic				✓		✓	✓		✓	
32-bit arithmetic logic unit							✓		✓	
32-bit integer arithmetic					✓		✓		✓	
64-bit floating-point arithmetic							✓		✓	
Virtual memory capability (paging)					✓		✓		✓	
Virtual memory capability (paging and segmentation)							✓		✓	
Stack processing instructions					✓		✓		✓	
Writable control store						✓		✓		
2K-byte cache (80 nanosecond cycle time)							✓	✓	✓	
Hardware process exchange							✓		✓	
Ring protection structure					✓		✓		✓	
Business instructions									✓	
Fast floating-point arithmetic									✓	

Operational Characteristics

Central Processor	100	200	300	400	500
Word Size: Memory	16 bits	16 bits	16 bits	16 bits	16 bits
Internal	16 bits	16 bits	16 bits	32 bits	32 bits
Instruction size	basic format 16 bits; extended format, 32 bits				
Addressing	direct, indexed and indirect in sectored and relative modes; extended (double word format); and stack processing				
Minimum-maximum main memory (K bytes K = 1,024)	8-128K bytes	8-128K bytes	64-512K bytes	128K-8M bytes	256K-8M bytes
Memory access time	680 ns.	600 ns.	600 ns.	600 ns.	600 ns.

Operational Characteristics

Central Processor	100	200	300	400	500
Memory increment per board	8K, 16K, 32K bytes	8K, 16K, 64K bytes	64K bytes	64K, 256K bytes	256K bytes
Maximum program size	128K bytes per program			32M bytes	32M bytes
Maximum virtual memory space	–	–	128K bytes/user	32M bytes	32M bytes
I/O data path	16 bits	16 bits plus 2 parity bits	16 bits plus 2 parity bits	16 bits plus 2 parity bits	16 bits plus 2 parity bits
Maximum DMT I/O rate	1.3 Mb/sec.	2Mb/sec.	2.5Mb/sec.	2.5Mb/sec.	2.5Mb/sec.
Addressable registers in high-speed register file	32 (includes index register, accumulators, stack register, DMA addresses, etc.)			128	128
Standard instructions	112	117	145	318	545
Optional instructions	9	37	19	–	–
Instruction types	memory reference, input/output, generic, shift				
Typical instruction times					
Add to memory	2.44 μ s	1.96 μ s	1.56 μ s	0.56 μ s	0.56 μ s
Skip on condition	2.84–3.30 μ s	2.04–2.32 μ s	1.92 μ s	1.92 μ s	1.92 μ s
Hardware multiply	14 μ s	10.48 μ s	8.50 μ s	4.20 μ s	4.20 μ s
Hardware divide	18.2–19.6 μ s	13.68–14.72 μ s	13.50 μ s	4.76 μ s	4.76 μ s
Single Precision Floating-Point add	–	9.35+.48A+.8n μ s	9.25 μ s	5.18 μ s	3.72 μ s
Single Precision Floating-Point multiply		27.82 μ s	25.20 μ s	9.00 μ s	4.02 μ s
Single Precision Floating-Point divide		39.46 μ s	37.90 μ s	11.92 μ s	6.04 μ s
Double Precision Floating-Point add	–			6.46 μ s	4.80 μ s
Double Precision Floating-Point multiply				20.14 μ s	6.46 μ s
Double Precision Floating-Point divide				24.04 μ s	8.68 μ s

Electromechanical Specifications

Chassis Capacity	5 boards	10 boards	17 boards
Chassis dimensions (W x H x D)	45.6 cm x 26.7 cm x 49.5 cm	45.6 cm x 40 cm x 49.5 cm	45.6 cm x 66.7 cm x 49.5 cm
Weight (including fans and power supply)	22.7 kg	24.9 kg	45.6 kg
Operating temp. range (°C)	0°–50°	0°–50°	0°–50°
Max. rel. humidity (no cond.)	95%	95%	95%
Mounting	table top or rack	rack	rack
Typical heat dissipation (BTU/hr.)	2,000	3,600	4,000
Voltage range (VAC)	190–250	190–250	190–250
Hz (single-phase)	47–63	47–63	47–63
Amps (typical)	5	9	10
Power supply	100 amp. main supply, chassis-mounted	100 amp. main supply, chassis-mounted	100 amp. main supply, chassis-mounted

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