

## HP E1485A

# **Technical Specifications**



- Get advanced control capability with 40 MHz Motorola 68EC030 32-Bit Processor
- Use powerful processing capability using fixed or floating point DSP
- Use up to 5 DSPs per module to increase DSP speed
- Get up to 64 MB of RAM for program and data storage
- Use the HP 35635T Programming Toolkit to speed your application software development
- Uses 1 C-size module slot
- Message-based commander

### VXI Digital Signal Processor

- Specifications describe warranted performance for the system configuration listed. Supplemental characteristics identified as "typical" or "characteristic," provide useful information by giving non-warranted performance parameters.
- The HP E1485A signal processing module is a high-performance measurement controller and digital signal processor. It combines a 32-bit microprocessor running at 40 MHz with state-of-the-art digital signal processors and user-written, downloaded software to achieve measurement processing performance previously seen only in custom hardware systems.

### Central processing unit (CPU)

High-speed measurement loops and multiple DSP processing start with a high-performance CPU. In the HP E1485A, the CPU is a Motorola 68EC030 running at 40 MHz. It manages communication with the host, initializes and monitors DSP operations and data transfers, and controls other VXI modules. CPU memory size is 4 MB, expandable to 64 MB at the time of purchase or later.

### Digital signal processors (DSP)

You can configure the HP E1485A to meet your signal processing needs.

For FFT speed and computational dynamic range, the HP E1485A comes standard with a 32-bit Motorola 96002 floating-point DSP assembly. This assembly can compute a 1,024-point, complex FFT in under 2 ms. For more speed, up to four DSP assemblies can be added to the HP E1485A (Opt IFL).

All the DSP assemblies are retrofitable.

# Fast internal transfer bus (FIT)

The time to transfer data to and from a DSP can be a significant portion of the overall processing time, particularly in multiple DSP configurations. The HP E1485A has a fast internal transfer bus designed to speed data transfer. It moves data between the CPU, the DSP assemblies, and the high-speed local bus at rates as high as 20 MB/s.

### High speed local bus

In addition to standard VXI backplane data transfers, the HP E1485A can transfer data over a high-speed local bus. HP has implemented a high-speed module-to-module transfer protocol using the VXI P2 connector. This local bus allows data transfers between adjacent modules at rates as high as 100 MB/s. Complex transfer types such as an append mode are supported, allowing multiple modules to send data to one HP E1485A.

#### **Downloaded software**

The HP E1485A is controlled through user-written, downloaded software running on HP's Signal Processor Operating System (SPOS). This operating system contains all the I/O drivers necessary to interface to the VXI backplane, the local bus, the DSP assemblies, and other system functions, such as programmable timers.

The user develops the downloadable application software for the HP E1485A on a host workstation using the HP E1485A Programmers Toolkit (HP 35635T). This software development environment and in-factory training class provides system integrators and other programmers experienced in UNIX®, ANSI C, and DSP programming the tools they need to develop high-performance code. The tools include VXI I/O functions, host communication functions, DSP control, optimized data transfers, timer operations, software signaling, math functions, and debugging. DSP libraries for the 96002 are included for standard DSP operations like FFT, etc. Advanced algorithms can be developed using the Motorola DSP development software and then linked to the Toolkit code.

When the application is debugged and ready to go, the code can be loaded in the application's 1 MB FLASH ROM on board the HP E1485A. This allows the HP E1485A to power up, executing the application.

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<b>CPU</b> Operating system Floating point unit RAM	Motorola 68ECO30, 40 MHz Motorola 68882, 40 MHz 4 MB (upgradable to 8, 12, 16, 32, 64)
VXI Interface Message-Based Commander/Servant Programmable Interrupt Handler Supports A16/A24, D32/D16/D08 (EO) Master/Slave Shared RAM	128 K x 32 static RAM
Data Transfer FIT bus cycle time FIT transfer rate Local bus passthrough rate Local bus to DSP rate Motorola 96002 DSP Clock speed Operation rate FFT speed (1,024 complex)	150 ns (32 bits every 150 ns) 6.67 MHz Up to 100 MB/s 16 MB/s to 96000 RAM 26.6 MB/s in some situations 33.33 MHz 49.5 MFLOPS, peak < 2 ms (includes windowing and bit reversal)
DSP Functions Supported (HP 35635T)	
These functions operate on blocks of data	FFT (forward and inverse, real and complex, with windowing) Power Spectrum Block Math Functions (+, -, *) Block Scale and Offset Block Constant Conjugate Zoom Filter Random Block Histogram
Power Requirements dc dynamic current	

		current
+5 V	8.00 A	0.00 A
+12 V	0.12 A	0.00 A
– 12 V	0.00 A	0.00 A
+24 V	0.00 A	0.00 A
–24 V	0.00 A	0.00 A
– 5.2 V	0.80 A	0.00 A
— 2 V	0.16 A	0.00 A

## **Ordering Information**



Digital Signal Processor	HP E1485A
Increase RAM memory to 8 MB	Opt AN2
Increase RAM memory to 12 MB	Opt UFC
Increase RAM memory to 16 MB	Opt UF5
Increase RAM memory to 32 MB	Opt ANC
Increase RAM memory to 64 MB	Opt ANE
Add one 96002 DSP card	Opt 1FL
Extra Manual	Opt OB1
Delete Manual	Opt OBO
3-year Uptime Support Loaner	Opt OR3
Warranty conversion to 1-year on-site	Opt W01
Programmers Toolkit	HP 35635T

### HP E1485A Functional Block Diagram



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