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HP E1485C

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 E1485C 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.



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Central processing unit (CPU)

High-speed measurement loops and multiple DSP processing start with a high-performance CPU. In the HP E1485C, 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 16 MB, expandable to 64 MB at the time of purchase or later.

Digital signal processors (DSP)

You can configure the HP E1485C to meet your signal processing needs.

For FFT speed and computational dynamic range, the HP E1485C 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 E1485C (Opt l04).

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 E1485C 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 E1485C 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 E1485C.

Downloaded software

The HP E1485C 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 E1485C on a host workstation using the HP E1485C 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 E1485C. This allows the HP E1485C to power up, executing the application.

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Operating Characteristics

CPU	
Operating system	Motorola 68EC030, 40 MHz
Floating point unit	Motorola 68882, 40 MHz
RAM	16 MB (upgradable to 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	150 ns (32 bits every 150 ns)
FIT transfer rate	6.67 MHz
Local bus passthrough rate	Up to 100 MB/s
Local bus to DSP rate	16 MB/s to 96000 RAM 26.6 MB/s in some situations
Motorola 96002 DSP	
Clock speed	40 MHz
Operation rate	60 MFLOPS
DSP Memory	2 Banks, A and B of 32 x 512k (4 MB)
FFT speed (1,024 complex)	< 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
+5V	2.70A[1]	0.90A[1]
+12V	[2]	[2]
–12V	0	0
+24V	0	0
–24V	0	0
–5.2V	0.80A	0.02A
–2V	0.21A	0.20A

[1] Add 0.70Amp DC and 0.02Amp Dynamic for each option 104.
[2] The HP E1485C may consume up to 120mA (40mA typical) of +12V while programming.

Warranty Information

The HP E1485C comes with a 3-yr warranty. During that period, the unit will either be replaced or repaired, at HP's option, and returned to the customer without charge. There is an option available at extra cost which extends the repair support to five years.

For More Information

See the HP 35635T Programmers Toolkit Product Overview 5966-2277E

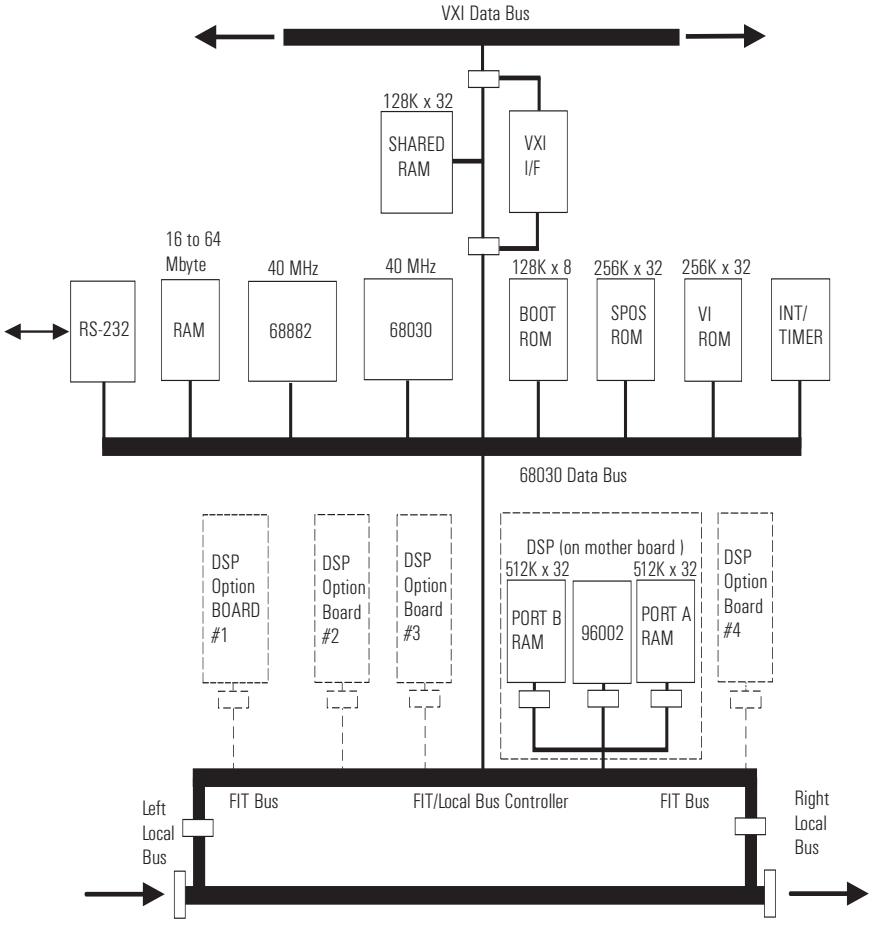
www.hp.com/go/data_acq

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Ordering Information

Digital Signal Processor	HP E1485A
Increase RAM memory to 32 MB	Opt ANC
Increase RAM memory to 64 MB	Opt ANE
Add one 96002 DSP card	Opt 104
Extra Manual	Opt OB1
Delete Manual	Opt OB0
3-year Uptime Support Loaner	Opt OR3
Warranty conversion to 1-year on-site	Opt W01
Programmers Toolkit	HP 35635T

HP E1485C Functional Block Diagram



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