Appendix A Specifications

The HP E 8400A VXI mainframe is 100% compatible with VXIbus specification revision 1.4.

Mechanical Specifications



Mainframe Weight	20.9 Kg (46 lbs) with no modules installed. Maximum module weight is 3.5 Kg (7.7 lbs) per slot to comply with shock and vibration specifications. Heavier modules can be installed if shock and vibration environment is less severe.	
Module Size	Thirteen (13) C-Size slots. The mainframes also accept A- or B- size modules using the optional HP E1403/7 adapters.	
Covering	Durable double-skin construction.	
Cable Routing and Rack Mounting	Cable routing and rack mounting can be enhanced with the following accessories:	
	 Versatile Rack Mount Adapters Recess from flush to 147.6 mm (5.8 inches) in 12.3 mm (approximately 1/2 inch) increments 	
	 Extend from flush to 147.6 mm (5.8 inches) in 12.3 mm (approximately 1/2 inch) increments Rack Slides or Support Rails Locking, tinted door 	
	• Versatile Cable Tray, one or two EIA rack units in height, allowing for user-defined interface panels.	

• Various interconnect receivers and interface test adapters (ITAs).

Input Power Specifications

AC Operation	Input Voltage: 90 VAC minimum to 264 VAC maximum.		
	Input Frequency: 47 Hz to 66 Hz (full voltage range) 360 Hz to 440 Hz (90 VAC min to 132 VAC max)		
DC Operation	Input Voltage: 100 VDC to 270 VDC		
Inrush Current	Inrush current is 40A maximum.		
Note	ote If inrush current causes mains supply voltage to temporarily drop below the required minimum voltage (90 VAC), the mainframe may not turn on properly.		
Total Input Power	Total input power can be estimated using the following expression:		
	1.5 * (power output + 75W) +150W		
	Total power input in W or VA, power factor corrected. Power output in $W = sum of voltage times current for the seven VXI output voltages.$		

Power Switch	On/Stdby with lighted "On" indicator. Front panel Diagnostic connector allows remote power-on.	
Detachable Line Power Cord	r IEC320 socket.See Chapter 3 for power cord specifications.	
Fuse	250V, 15A, fast blow. Suitable for all specified line voltages.	
Chassis Ground Tap	m4x0.7 threaded nut insert on back of mainframe.	
Mains Overvoltage CategoryCategory II. Refer to Electromagnetic Compliance section for ac details.		

Output Power Specifications

Temperature	Available Power *	Usable Power **	Usable Power **
	90 - 264 VAC	120 - 264 VAC	90 - 120 VAC
0 - 25°C	1,168W	800W	550W
0 - 40°C	1,168W	700W	550W
0 - 55°C	1,168W	600W	550W
* Sum of voltages times currents. Not always usable due to thermal protection shutdown. ** Total output before thermal protection shutdown.			

Voltage	Peak Current (I _{MP} *) **	Allowed Variation *	Ripple/Noise DC Load *	Dynamic Current (I _{MD} *) ***	Induced Ripple/Noise
+5V	60A	+0.25V / -0.125V	50 mV	7.0A	50 mV
+12V	10A	+0.60V / -0.36V	50 mV	2.5A	50 mV
-12V	10A	-0.60V / +0.36V	50 mV	2.5A	50 mV
+24V	9A	+1.2V / -0.72V	150 mV	5.0A	150 mV
-24V	10A	-1.2V / +0.72V	150 mV	5.0A	150 mV
-5.2V	30A	-0.26V / +0.156V	50 mV	8.0A	50 mV
-2V	20A	-0.10V / +0.10V	50mV	5.0A	50mV

* Specifications apply at the mainframe backplane, 0 - 55°C.

** I_{MP} = Rated mainframe peak DC output current as defined by the VXIbus Specification.

*** I_{MD} = Rated mainframe peak-to-peak dynamic current as defined in the VXIbus Specification by a current vs. frequency curve.

+5V STDBY: Up to 1A can be provided by the user through pins 8 and 21 of the diagnostic connector.

Cooling Specifications

High performance impeller provides cooling air to modules. Unique air distribution system (patent applied for) and pressurized plenum provides quiet operation and uniform airflow from front to rear of modules. Separate power supply cooling fan provides an independent air path for reliable cooling of power supply.

Cooling Modes High or variable cooling mode switchable on the front panel. Controls both impeller and power supply fan.

High Fan Speed Mode: full airflow at all times.

Variable Fan Speed Mode: fan speed increments through 5 discreet speeds as a function of power supply and reference temperatures (pins 11, 12 of diagnostic connector). Reference temperature is a function of load and ambient temperature.

At full load:

- low speed up to approximately 25°C
- high speed above approximately 40°C

At no load:

- low speed up to approximately 38°C
- high speed above approximately 53°C
- If power supply temperature exceeds a set limit, fan speed will increase.

At low fan speed, airflow is approximately 60% of high fan speed.

Airflow Path For VXI module cooling, air enters through the back of the mainframe and exhausts out the sides.

For power supply cooling, air enters through the right side (when viewed from front) and is exhausted through the left side.

An Air Filter Kit is available for demanding environmental applications.

Cooling Specification Chart



These curves represent airflow through a single slot with the following conditions:

- fans at full speed
- all other slots empty
- filler panels installed over all other slots
- optional air filter not installed

Acoustical Noise Specifications

Low Fan Speed: 44 dBA sound power at bystander position one meter in front of mainframe.

High Fan Speed: 52 dBA sound power at bystander position one meter in front of mainframe.

Monitor Specifications

Indicators	• Input Power On
	• Power Supply Voltages within Spec (±8%)
	• Power Supply Temperature OK
	• Fans OK
	• Backplane Activity
	• SYSFAIL
Switches	• On/Standby
	• Fan Mode
	• Reset
Diagnostic Connector	• Output all 7 backplane voltages for monitoring.
	• Output +5V and +12V for remote applications (1A max each).
	• Input +5VSTDBY to backplane (1A total for pins 5 and 18).
	• Remotely operate On/Stdby.
	• Power supply temperature output (0 mV = 0° C, 10 mV per $^{\circ}$ C).
	• Reference temperature output (0 mV = 0° C, 10 mV per $^{\circ}$ C).
	• Fans OK output (TTL low true logic levels).
	• Backplane voltages OK output (TTL low true logic levels).

- SYSRESET*, input or output. (TTL low-true logic levels).
- ACFAIL*, output. (TTL low-true logic levels)
- Ground

Backplane Specifications

- Solid state automatic daisy-chain jumpering for BUS GRANT and IACK signals.
- Full differential distribution of CLK10.
- ACFAIL* and SYSRESET* in full compliance with the VMEbus Specification.
- Surface mount construction and no sockets for maximum reliability.

Environmental Specifications

Operating Location	Sheltered location where air temperature and humidity is controlled within this product's specifications and the equipment is protected against direct exposure to climatic conditions such as direct sunlight, wind, rain, snow, sleet and icing, water spray or splash, hoarfrost, or dew (typically indoors). Pollution degree 2.
Temperature	Operating Temperature Range: 0°C to +55°C
	Storage Temperature Range: -40°C to +75°C

Humidity	Operating Humidity Range:
	 Up to 95% RH from 0°C to +40°C (non-condensing). Up to 65% RH from +40°C to +55°C (non-condensing).
	Storage Humidity Range:
	 Up to 95% RH from 0°C to +55°C (non-condensing). Up to 90% RH from +55°C to +75°C (non-condensing).
Shock	End Use Handling:
	• Half sine waveform, <3 msec duration, $\Delta v = 160$ cm/sec minimum.
	Transportation:
	• Trapezoidal waveform, $\Delta v = 605$ cm/sec, 30 g minimum.
Vibration	Operating and Functional:
	• 5 to 500 Hz, 0.0001 g ² /Hz Spectral Density
	Survival, Swept Sine:
	• 5 to 500 Hz Resonance Search, 5 minute dwell on resonances at 0.5g
	Survival, Random:
	• 0.015 g ² /Hz Spectral Density.
Altitude	Up to 3000m.

Electromagnetic Compliance Specifications

The HP E8400A mainframe conforms to the following EMC product specifications:

- CISPR 11:1990/EN55011 (1991): Group 1 Class A
- EN61000-3-2:1995 Class A
- EN61000-3-3:1995
- EN50082-1:1992
- IEC 801-2:1991: 4kV CD, 8kVAD
- IEC 801-3:1984: 3 V/m
- IEC 801-4:1988: 1kV Power Line, 0.5kV Signal Lines
- ENV50141:1993/prEN50082-1 (1995): 3 Vrms
- ENV50142:1994/prEN50082-1 (1995): 1 kV CM, 0.5 kV DM
- EN61000-4-8: 1993/prEN50082-1 (1995): 3 A/m
- EN61000-4-11:1994/prEN50082-1 (1995): 30 %, 10 ms 60 %, 100ms

EMC Performance EMC performance can be further enhanced with the following accessories:

- Backplane Connector Shields per VXI rev 1.4, B.7.2.3.
- 1-slot Blank Panel with EMI Contact per VXI rev 1.4, B.7.2.3
- Intermodule Chassis Shield per VXI rev 1.4, B.7.3.4

Safety Specifications

- IEC 61010-1 (1990) including Amendments 1 (1992) and 2 (1995)
- EN 61010-1 (1993) including Amendment 2 (1995)
- CSA C22.2 #1010.1 (1992)
- UL 3111-1 (1994)

Power Supply Protection A

All outputs protected from over-temperature, over-voltage, over-current, short-to-ground and short-to-other-output. Protection mode is full shutdown. Recovery occurs when the fault condition is removed and power on/standby is cycled.

Repair Specifications

Diagnosis and Troubleshooting through the front panel monitor and connector.

MTTR for Power Supply:<5 min (with mainframe and modules fully installed in rack)

MTTR for Impeller and/or Fan:<5 min (with mainframe and modules fully installed in rack)