Appendix A
HP E8401A, E8403A Product Specifications

Product Descriptions

Model	Description	Power Supply	Monitoring
HP E8401A	13-Slot C-size VXI Mainframe	500W Available Power	Basic Monitoring
HP E8403A	13-Slot C-size VXI Mainframe	1000W Available Power	Basic Monitoring

General Specifications

VXI Device Type: Mainframe
Data Transfer Bus: per VXIbus Spec, Rev 1.4
Size: C
Slots: 13 available
Connectors: P1 / P2
Shared Memory: n/a
VXI Busses: per VXIbus Spec, Rev 1.4

Mechanical Specifications

Module Size:

Thirteen (13) C-Size slots. The mainframe also accepts A- or B-size modules using the HP E1403 or E1407 Adapters.

Mainframe Dimensions:

Height: 352 mm (13.9 inches) (8 EIA rack units)
Width: 424.5 mm (16.7 inches)
Depth: 631 mm (24.9 inches)
Weight with no modules installed:
E8401A: approximately 19 Kg (42 lbs)
E8403A: approximately 24 Kg (53 lbs)

Maximum Module Weight:

3.5 Kg (7.7 lbs) per slot to comply with shock and vibration specifications. Heavier modules may be installed if shock and vibration environment is less severe.

Output Power Specifications

Total Available and Usable Power

Product	Temperature	Available Power[a] 90-264VAC	Usable Power[b] 110-264VAC	Usable Power[b] 90-110VAC
E8401A	0-55°C	686 W	500 W	500 W
E8403A	0-55°C	1,902 W	1,000 W	950W

a. Sum of voltages times currents. Not always usable due to thermal protection shutdown.

b. Total output before thermal protection shutdown or safety limitation.

Peak and Dynamic Current

	E8401A		E8403A	
Voltage	Peak Current, I_{MP} [a, b]	Dynamic Current, I_{MD} [a, c]	Peak Current, I_{MP} [a,b]	Dynamic Current, I_{MD} [a,c]
+5V	50A	5A	90A	9A
+12V	6A	1A	15A	2.5A
-12V	4A	1A	15A	2.5A
+24V	4A	2A	15A	5A
-24V	4A	2A	15A	5A
-5.2V	20A	2A	60A	8A
-2V	10A	1A	30A	5A

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

b. IMP = Rated mainframe peak DC output current as defined by the VXIbus Specification.

c. IMD = Rated mainframe peak-to-peak dynamic current as defined in the VXIbus Specification by a current vs. frequency curve.

Output Voltage Specifications

Voltage	Allowed Variation[a]	Ripple/Noise DC Load[a]	Induced Ripple/Noise[a]
+5V	+0.25V / –0.125V	50mV	50mV
+12V	+0.60V / –0.36V	50mV	50mV
-12V	–0.60V / +0.36V	50mV	50mV
+24V	+1.20V / –0.72V	150mV	150mV
-24V	–1.20V / +0.72V	150mV	150mV
-5.2V	–0.26V / +0.156V	50mV	50mV
-2V	–0.10V / +0.10V	50mV	50mV

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

+5VSTDBY: Up to 1A may be available if provided by the user through pins 8 and 21 of the diagnostic connector.

Input Power Requirements

Input Voltage: 90VAC Min to 264VAC Max, Single continuous range
Input Frequency: 47Hz Min to 66Hz Max (across full input voltage range)
360Hz to 440Hz: (Not Recommended. Leakage currents may exceed safety limits, 132VAC Max)
DCV Input: (Not Recommended. Input connector is not certified for DCV input.)
Inrush Current:
E8401A: Input Voltage 110VAC:25A Typical
Input Voltage 264VAC:55A Typical
E8403A: Input Voltage 110VAC:40A Typical
Input Voltage 264VAC:60A Typical

Note: If inrush current causes mains supply voltage to temporarily drop below the required minimum voltage (90VAC), the mainframe may not turn on properly.

Total Input Power may be estimated by the following expression:
1.4 * (Output Power + 70W)
Notes: Total Power Input in Watts or VA, Power Factor Corrected.
Output Power in Watts = Sum of Voltage times Current for the seven VXI output voltages.
Expression is valid for full output load and 90VAC.
Efficiency increases slightly with higher input voltage.
Efficiency decreases slightly with lower output load.

Power Switch: On/Standby switch on front.
Indicators: ON indicator green when mainframe powered on
Standby indicator amber in Standby and ac power line connected.
May be switched On/Standby remotely via Diagnostic Connector.

Mains Power Installation Category II

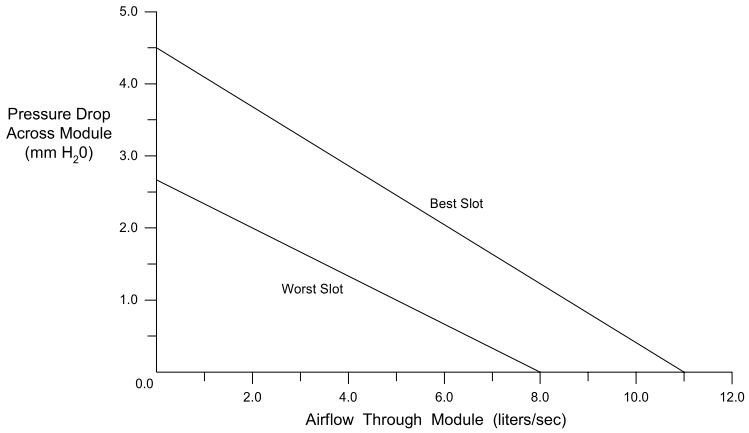
+5VSTDBY: Power may be provided by the user to the +5VSTDBY bus on the VXI backplane.
Current: 1A Max
Voltage Range: 5.25V Max, 4.875V Min
Connector: Pins 8 and 21 of the Diagnostic Connector.

Chassis Ground Connection:M4 x 0.7 threaded nut insert on rear panel.

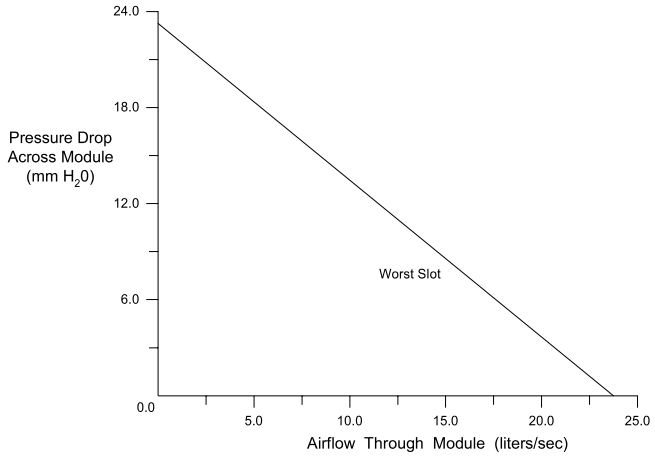
Cooling Specifications

High performance impeller provides cooling air to modules. Unique air distribution system (patent applied) and positively-pressurized plenum provide quiet operation and uniform airflow from slot to slot and from front to rear of modules. Outstanding back pressure performance insures airflow through dense modules. Separate power supply cooling fan(s) provides an independent air path for reliable cooling of power supply.

Cooling Specification Charts



- VXI-8 Specification Draft 2.0. Fixture revision 1.7.
- VXI-8 Standard Modules installed in all other slots.
- Performance shown for Worst Slot (slot 1) and Best Slot (slot 10).
- Front-to-Rear Variance 13% worst case. Typically 10%-12% in most slots.
- Fans on Full Speed. Minimum airflow is approximately 50% with fans on Variable Speed.
- Air Filter Kit not installed. Airflow is reduced approximately 10% with clean air filters installed.
- Measurements taken at 1,500m altitude.



- All other slots blocked. Airflow decreases as additional slots are opened.
- Performance shown for Worst Slot (slot 2). Airflow is greater in all other slots.
- Fans on Full Speed. Minimum airflow is approximately 50% with fans on Variable Speed.
- Air Filter Kit not installed. Airflow is reduced approximately 10% with clean air filters installed.
- Measurements taken at 1,500m altitude.

Cooling Mode (High or Variable)

Switchable on the front panel. Controls both impeller and fan.

High Fan Speed Mode: Full Airflow all the time.

Variable Fan Speed Mode:

Fan Speed increments through 5 discrete speeds as a function of power supply temperature and reference temperature. Reference temperature (pins 11,12 of Diagnostic Connector) is measured on the backplane and is a function of load and ambient temperature.

At full load: Low Speed up to approximately 30°C ambient.
High Speed above approximately 40°C ambient.

At no load: Low Speed up to approximately 40°C ambient.
High Speed above approximately 50°C ambient.

Assuming default limits:

At full load: Low Speed up to approximately 30°C
High Speed above approximately 40°C

At no load: Low Speed up to approximately 40°C
High Speed above approximately 50°C

Airflow Path

Inlet through rear and exhaust through upper sides for both power supply and modules. Allow 50mm clearance for proper airflow.

Air Filter Kit available for demanding environmental applications.

Acoustical Noise Specifications

Low Fan Speed:41.4 dBA sound pressure at bystander position, 1m in front of mainframe.

High Fan Speed:54.9 dBA sound pressure at bystander position, 1m in front of mainframe.

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 and VXIbus Specifications.
- Surface mount construction and no sockets for maximum reliability.

Basic Monitor Specifications

Indicators

- **Power – Stdby:** Glows amber in Standby and line connected.
- **Power – On:** Glows green when On.
- **Monitor – Supply Voltages:** Glows green when power supply output voltages within specification (± 8 %). Otherwise flashes amber.
- **Monitor – Supply Temp:** Glows green when power supply temperature is below a set limit. Otherwise flashes amber.
- **Monitor(Status) – Fans**: Glows green when module and power supply fans are operating within set limits. Otherwise flashes amber.
- **Monitor(Status) – Backplane Activity:** Flashes green when backplane activity occurs. Triggered by backplane signals DS0 and DS1.
- **Monitor(Status) – Backplane SYSFAIL:** Glows amber when backplane signal SYSFAIL* is asserted.

Switches

- **On/Standby**
- **Fan Mode:** Switch all fans between full speed and variable speed modes.
- **Reset:** Asserts backplane signal SYSRESET*.

Diagnostic Connector

- Output all 7 backplane voltages for monitoring
- Output +5V and +12V for remote applications. 1A max each.
- Input +5VSTDBY to backplane. 1A max total for pins 5 and 18 wired in parallel.
- Remotely operate On/Standby
- Power supply temperature output. 0mV = 0°C, 10mV per °C.
- Reference temperature output. 0mV = 0°C, 10mV per °C.
- Fans OK output, same as Fans indicator. 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

Environmental Specifications

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.
Up to 65% RH from +40°C to +55°C.

Storage Humidity Range: Up to 95% RH from 0°C to +55°C.
Up to 65% RH from +55°C to +75°.

Shock

End Use Handling: Half sine waveform, <3 msec Duration, Δv = 160 cm/sec minimum

Transportation: Trapezoidal waveform, Δv = 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 0.5 g

Survival, Random: 0.015 g^2/Hz Spectral Density

Altitude: Up to 3000m

Pollution Degree 2

Safety Specifications

Conforms to EN61010-1 including Amendment 2 (IEC 1010-1 including Amendment 2)

Certified to CSA 1010.1

NRTL Listing to UL 3111-1

Conforms to EN60950 (IEC 950)

Certified to CSA 950.

NRTL Listing to UL 1950 Compliance.