

# ENERGY STAR® Power and Performance Data Sheet

IBM 8233-E8B



## System Characteristics

Form Factor	4U Rackmount
Available Processor Sockets	4
Available DIMM Slots / Max Memory Capacity	32 / 512 GB
ECC and/or Fully Buffered DIMMs	Yes
Available Expansion Slots	3 PCIe, 2 PCI-X
Minimum and Maximum # of Hard Drives	1 to 8
Redundant Power Supply Capable?	Yes
Power Supply Make and Model	Emerson Network Power 7001520-J000
Power Supply Output Rating* (watts)	1725
Minimum and Maximum # of Power Supplies	2 and 2
Input Power Range (AC or DC)	200-240 VAC
Power Supply Efficiency at Specified Loadings*	85.2@10%, 90.6@20%, 92.2@50%, 89.2@100%
Power Supply Power Factor at Specified Loadings*	0.88@10%, 0.96@20%, 0.99@50%, 0.99@100%
Operating Systems Supported	AIX 6.1H, Linux SLES 1
Installed Operating System for Testing	AIX 6.1H

\* Note: Power supply information is for a single power supply only

## System Configurations

	Minimum	Typical	Maximum
Configuration ID	3 x 8335	3 x 8335	3 x 8335
Processor Information	3 x 6-core 3.3 GHz POWER7 processor card	3 x 6-core 3.3 GHz POWER7 processor card	3 x 6-core 3.3 GHz POWER7 processor card
Memory Information	6 x 4GB DIMMs, 1067 MHz, 2Gb DDR3 DRAM	12 x 8GB DIMMs, 1067 MHz, 2Gb DDR3 DRAM	24 x 16GB DIMMs, 1067 MHz, 2Gb DDR3 DRAM
Internal Storage	1 x 2.5 inch, 15 kRPM SAS	4 x 2.5 inch, 15 kRPM SAS	8 x 2.5 inch, 15 kRPM SAS
I/O Devices	1 x 4-Port 1Gb Integrated Virtual Ethernet, 1 x GX Dual-port 12X Channel Adapter	1 x 4-Port 1Gb Integrated Virtual Ethernet, 1 x GX Dual-port 12X Channel Adapter, 2 x 4 Gigabit Single Port Fibre Channel Adapter	1 x 4-Port 1Gb Integrated Virtual Ethernet, 1 x GX Dual-port 12X Channel Adapter, 3 x 2-Port 10/100/1000 Base-TX Ethernet, 1 x 4 Gigabit Single Port Fibre Channel Adapter
Power Supply Number and Redundancy Configuration	2	2	2
Management Controller or Service Processor Installed?	Yes	Yes	Yes
Other Hardware Features / Accessories	DVD-RAM	DVD-RAM	DVD-RAM

## Power Data

	Minimum	Typical	Maximum
Idle Category (1S and 2S only)	N/A (3S or 4S)		
ENERGY STAR Idle Power Allowance (1S and 2S only)	N/A	N/A	N/A
Measured Idle Power (watts)	378	491	662
Power at Full Load* (watts)	540	702	946
Benchmark / Method Used for Full Load Test	LINPACK		
Test Voltage and Frequency for Idle and Full Load Test	230V 50Hz		
Range of Total Estimated Energy Usage ** (kWh/year)	6,623 to 9,461	8,602 to 12,299	11,598 to 16,574
Link to Detailed Power Calculator (if available)	<a href="http://www-912.ibm.com/see/EnergyEstimator">http://www-912.ibm.com/see/EnergyEstimator</a>		

\* Note: Full load power represents the sustained, average power at 100% load of the given workload, and does not necessarily represent the absolute peak power or the highest average, sustained power possible for other workloads.

\*\* Note: Estimated kWh/year gives the absolute range of energy use a user could expect from continuous operation (24x7x365) and ranges from 100% Idle usage to 100% full load operation. The calculation also includes typical data center overhead at a ratio

## Power and Performance for Benchmark #1

	Minimum	Typical	Maximum
Benchmark Used and Type of Workload	LINPACK		
Avg. Power Measured During Benchmark Run	540 Watts	702 Watts	946 Watts
Benchmark Performance Score	335.7 Gflops	383.6 Gflops	407.6 Gflops
Power Performance Ratio (perf score/avg. power)	0.622	0.546	0.431
Link to Full Benchmark Report (Where Available)			

Benchmark #1

**Power and Performance for Benchmark #2 (optional)**

**Minimum**

**Typical**

**Maximum**

**Benchmark #2**

	Minimum	Typical	Maximum
Benchmark Used and Type of Workload			
Avg. Power Measured During Benchmark Run			
Benchmark Performance Score			
Power Performance Ratio (perf score/avg. power)			
Link to Full Benchmark Report (Where Available)			

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<b>Power Saving Features</b>	<b>Enabled on Shipment</b>	<b>End-User Enabling Required</b>
Processor Dynamic Voltage and Frequency Scaling	No	Yes
Processor or Core Reduced Power States	Yes	No
Power Capping	No	Yes
Variable Speed Fan Control Based on Power or Thermal Readings	Yes	No
Low Power Memory States	No	No
Low Power I/O States	Yes	No
Liquid Cooling Capability	No	No
Other1:		
Other2:		
Other3:		
Other4:		

## Power and Temperature Measurement and Reporting

Input Power Available & Accuracy?	Yes, +/- 3%
Input Air Temp Available & Accuracy?	Yes, +/- 1°C typical, +/- 2°C maximum
Processor Utilization Available?	Yes
Other Data Measurements Available & Accuracy?	
Compatible Protocols for Data Collection	REST
Averaging method and time period	30 second average, 1 second peak

## Thermal Information \*

	<b>Minimum</b>	<b>Typical</b>	<b>Maximum</b>
Total Power Dissipation (watts)	540	702	946
Delta Temperature at Exhaust at Peak Temp. (°C)	4.3	5.6	7.6
Airflow at Maximum Fan Speed (CFM) at Peak Temp.	220	220	220
Airflow at Nominal Fan Speed (CFM) at Nominal Temp.	86	98	130

\* References: ASHRAE Extended Environmental Envelope Final August 1, 2008  
 Thermal Guidelines for Data Processing Environments, ASHRAE, 2004, ISBN 1-931862-43-5  
 Peak temperature is defined as 35 °C, Nominal Tempera

## Notes

1. SPECpower\_ssj2008 is a registered trademark of the Standard Performance Evaluation Corporation (SPEC). Benchmark results stated above reflect results published on XXXX/XX. For the latest SPECpower\_ssj2008 benchmark results, visit <http://www.spec.org>

## ENERGY STAR Qualified Configurations

**Include specific information on ENERGY STAR Qualified SKUs or configurations**

Idle and maximum power consumption and performance are estimated for the minimum, typical, and maximum configurations.

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**ENERGY STAR Qualified Configurations (Continued)**

**Include specific information on ENERGY STAR Qualified SKUs or configurations**

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