Sun SPARC Enterprise T5140 and T5240 Servers

Site Planning Guide

Part No. 820-3314-14
December 2010, Revision A

Contents

Preface

This guide provides Oracle's Sun SPARC Enterprise T5140 and T5240 server specifications and site requirements that you can use to plan and prepare your site.

UNIX Commands

This document might not contain information on basic UNIX commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Oracle Solaris Operating System documentation, which is at

  (http://docs.sun.com)

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

The documents listed as online are available at:

(http://docs.sun.com/app/docs/prod/sparc.t5140)

(http://docs.sun.com/app/docs/prod/sparc.t5240)

Application	Title	Part Number	Format	Location
Product Notes	*Sun SPARC Enterprise T5140 and T5240 Servers Product Notes*	820-3312	PDF	Online
Getting Started	*Sun SPARC Enterprise T5140 and T5240 Servers Getting Started Guide*	820-3875	Printed	Ships with system
Getting Started	*Sun SPARC Enterprise T5140 and T5240 Servers Getting Started Guide (DC)*	820-5840	Printed	Ships with system
Planning	*Sun SPARC Enterprise T5140 and T5240 Servers Site Planning Guide*	820-3314	PDF HTML	Online
Installation	*Sun SPARC Enterprise T5140 and T5240 Servers Installation Guide*	820-3315	PDF HTML	Online
Administration	*Sun SPARC Enterprise T5140 and T5240 Servers Administration Guide*	820-3316	PDF HTML	Online

Application	Title	Part Number	Format	Location
Service	*Sun SPARC Enterprise T5140 and T5240 Servers Service Manual*	820-3318	PDF HTML	Online
Safety	*Sun SPARC Enterprise T5140 and T5240 Servers Safety and Compliance Guide*	820-3319	PDF	Online
Remote Management	*Oracle Integrated Lights Out Manager (ILOM) 3.x Supplement for Sun SPARC Enterprise T5140 and T5240 Servers*	820-6684	PDF HTML	Online

Documentation, Support, and Training

Additional resources are available at:

- Documentation (http://www.sun.com/documentation)
- Support (http://www.sun.com/support)
- Training (http://www.sun.com/training)

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Sun SPARC Enterprise T5140 and T5240 Servers Site Planning Guide, part number 820-3314-14.

Sun SPARC Enterprise T5140 and T5240 Servers Site Planning Guide

This guide contains the following sections:

Physical Specifications

The table lists the physical specifications for Oracle's Sun SPARC Enterprise T5140 server.

TABLE: T5140 Physical Specifications

Description	U.S.	Metric
Width	16.75 in.	425 mm
Depth	28.125 in.	714 mm
Height	1.746 in.	44 mm
Weight, approximate (without PCI cards and rackmounts)	42 lb	19 kg

The table lists the physical specifications for Oracle's Sun SPARC Enterprise T5240 server.

TABLE: T5240 Physical Specifications

Measure	U.S.	Metric
Width	16.75 in.	425 mm
Depth	28.125 in.	714 mm
Height (2 rack units)	3.49 in.	88 mm
Weight, approximate (without PCI cards, rackmounts, and memory mezzanine assembly. The memory mezzanine assembly installed in the server increases the server weight by approximately 6.61 lb (3 kg).	57 lb	26 kg

Related Information

- "Minimum Clearance for Service Access" on page 2
- `Sun SPARC Enterprise T5140 and T5240 Servers Documentation`
- *Sun SPARC Enterprise T5140 and T5240 Servers Getting Started Guide*
- *Sun SPARC Enterprise T5140 and T5240 Servers Getting Started Guide (DC)*
- *Sun SPARC Enterprise T5140 and T5240 Servers Service Manual*

Minimum Clearance for Service Access

The table shows minimum clearances needed for service for both servers.

TABLE: Minimum Clearance for Service Access

Description	Specification
Clearance, front of system	36 in. (91 cm)
Clearance, rear of system	36 in. (91 cm)

Related Information

- "Environmental Specifications" on page 3

Environmental Specifications

The table lists the environmental specifications for both the Sun SPARC Enterprise T5140 and T5240 servers.

TABLE: Environmental Specifications

Specification	Operating	Nonoperating
Temperature	• Sea level to 2953 ft (900 m): 41°F to 95°F (5°C to 35°C) • Above 2953 ft (900 m): Decrease the maximum allowable temperature by 1.6°F/1000 ft (1°C/300 m) IEC 60068-2-1 Test Ad, and 60068-2-2 Test Bd	-40°F to 149°F (-40°C to 65°C) IEC 60068-2-1 Test Ab and 60068-2-2 Test Bb
Relative Humidity	10 to 90% RH, 27°C maximum wet bulb (noncondensing) IEC 60068-2-56 Test Cb	93% RH, 35°C maximum wet bulb (noncondensing) IEC 60068-2-56 Test Cb
Altitude	10,000 ft (3,000 m) IEC 60068-2-13 Test M and 60068-2-41 Test Z/BM	40,000 ft (12,000 m) IEC 60068-2-13 Test M
Vibration	0.15 G (z-axis), 0.10 G (x-, y-axes), 5-500 Hz swept sine IEC 60068-2-6 Test Fc	0.5 G (z-axis), 0.25 G (x-, y-axes), 5-500 Hz swept sine IEC 60068-2-6 Test Fc
Shock	3 G, 11 ms half-sine IEC 60068-2-27 Test Ea	• Roll-off: 1-inch roll-off free fall, front to back rolling directions • Threshold: 25 mm threshold height at 0.75 m/s impact velocity ETE-1010-02 Rev A

Related Information

■ "Power Source Requirements" on page 4

Power Source Requirements

Both the Sun SPARC Enterprise T5140 and T5240 servers have two autoranging power supplies. To ensure redundant operation of the power supplies, connect the two power cords to separate circuits.

Server models that run on DC input power require that you build power cables and connect to DC input power as specified in the *Sun SPARC Enterprise T5140 and T5240 Servers Installation Guide*.

Use the specifications in this guide only as a planning guide. For more precise power values, make power measurements on your specific server configuration using your planned workload. Refer to one of the following tables based on the model of your server.

TABLE: Sun SPARC Enterprise T5140 Server (1.2 GHz Processor, 4-Disk Capable) Power Specifications

General Specifications	AC Input Models	DC Input Models
Operating input voltage range (input voltage tolerance +/- 10%)	100 to 240 VAC, 50-60 Hz	-40 to -75 VDC
Maximum operating input current	At 100 VAC: 6.9A	At -40 VDC: 15.2A
Maximum operating input current	At 200 VAC: 3.4A	
Maximum operating input power	At 100 VAC: 652.1 W	At -40 VDC: 609.1 W
Maximum heat dissipation	2224.9 BTU/hour (2347.4 KJ/hour)	2078.2 BTU/hour (2192.6 KJ/hour)
Maximum standby power	21.5 W	20.1 W
Maximum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.2 GHz processor, with sixteen 4 GB FB-DIMMs, 4 HDDs, 3 PCIe I/O cards)		
Idle input power	369.4 W	345.1 W
Peak input power running SpecJBB	557.1 W	520.3 W
Minimum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (4-core, 1.2 GHz processor, with eight 1 GB FB-DIMMs, no HDDs, no PCIe I/O cards)		
Idle input power	287.0 W	268.1 W
Peak input power running SpecJBB	335.0 W	312.9 W

TABLE: Sun SPARC Enterprise T5140 Server (1.2 GHz Processor, 8-Disk Capable) Power Specifications

General Specifications	AC Input Models	DC Input Models
Operating input voltage range (input voltage tolerance +/- 10%)	100 to 240 VAC, 50-60 Hz	Not available as a DC input model.
Maximum operating input current	At 100 VAC: 7.7A	
Maximum operating input current	At 200 VAC: 3.8A	
Maximum operating input power	At 100 VAC: 730.1 W	
Maximum heat dissipation	2491.3 BTU/hour (2628.4 KJ/hour)	
Maximum standby power	21.5 W	
Maximum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.2 GHz processor, with sixteen 8 GB FB-DIMMs, 8 HDDs, 3 PCIe I/O cards)		
Idle input power	428.2 W	
Peak input power running SpecJBB	627.1 W	
Minimum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (4-core, 1.2 GHz processor, with eight 1 GB FB-DIMMs, no HDDs, no PCIe I/O cards)		
Idle input power	287.0 W	
Peak input power running SpecJBB	335.0 W	

TABLE: Sun SPARC Enterprise T5140 Server (1.4 GHz Processor, 4-Disk Capable Server) Power Specifications

General Specifications	AC Input Models	DC Input Models
Operating input voltage range (input voltage tolerance +/- 10%)	100 to 240 VAC, 50-60 Hz	Not available as a DC input model.
Maximum operating input current	At 100 VAC: 7.5A	
Maximum operating input current	At 200 VAC: 3.8A	
Maximum operating input power	At 100 VAC: 717.1 W	
Maximum heat dissipation	2446.7 BTU/hour (2581.4 KJ/hour)	
Maximum standby power	21.5 W	

TABLE: Sun SPARC Enterprise T5140 Server (1.4 GHz Processor, 4-Disk Capable Server) Power Specifications *(Continued)*

Maximum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.4 GHz processor, with sixteen 8 GB FB-DIMM, 4 HDDs, 3 PCIe I/O cards)	
Idle input power	426.4 W
Peak input power running SpecJBB	656.1 W
Minimum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (4-core, 1.4 GHz processor, with four 1 GB FB-DIMMs, no HDDs, no PCIe I/O cards)	
Idle input power	329.0 W
Peak input power running SpecJBB	408.0 W

TABLE: Sun SPARC Enterprise T5240 Server (1.2 GHz Processor, 8-Disk Capable) Power Specifications

General Specifications	AC Input Models	DC Input Models
Operating input voltage range (input voltage tolerance +/- 10%)	100 to 240 VAC, 50-60 Hz	-40 to -75 VDC
Maximum operating input current Maximum operating input current	At 100 VAC: 10.6A At 200 VAC: 5.3A	At -40 VDC: 23.6A
Maximum operating input power	At 100 VAC: 1009.1 W	At -40 VDC: 942.6 W
Maximum heat dissipation	3443.3 BTU/hour 3632.8 KJ/hour)	3216.2 BTU/hour (3393.3 KJ/hour)
Maximum standby power	26.0 W	24.3 W
Maximum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.2 GHz processor, with thirty-two 8 GB FB-DIMM+, 8 HDDs, 6 PCIe I/O cards)		
Idle input power	582.5 W	544.1 W
Peak input power running SpecJBB	857.1 W	800.6 W

TABLE: Sun SPARC Enterprise T5240 Server (1.2 GHz Processor, 8-Disk Capable) Power Specifications *(Continued)*

Minimum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.6 GHz processor, with eight 1 GB FB-DIMMs, no HDDs, no PCIe I/O cards)		
Idle input power	315.0 W	294.2 W
Peak input power running SpecJBB	361.0 W	337.2 W

TABLE: Sun SPARC Enterprise T5240 Server (1.4 GHz Processor, 8-Disk Capable) Power Specifications

General Specifications	AC Input Models	DC Input Models
Operating input voltage range (input voltage tolerance +/- 10%)	200 to 240 VAC, 50-60 Hz	-40 to -75 VDC
Maximum operating input current Maximum operating input current	At 100 VAC: 11.7A At 200 VAC: 5.9A	At -40 VDC: 26.1A
Maximum operating input power	At 200 VAC: 1116.1 W	At -40 VDC: 1042.5 W
Maximum heat dissipation	3808.4 BTU/hour 4018.0 KJ/hour)	3557.3 BTU/hour (3753.1 KJ/hour)
Maximum standby power	26.0 W	24.3 W
Maximum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.4 GHz processor, with thirty-two 8 GB FB-DIMM+, 8 HDDs, 6 PCIe I/O cards)		
Idle input power	641.5 W	599.2 W
Peak input power running SpecJBB	959.1 W	895.9 W
Minimum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.4 GHz processor, with eight 1 GB FB-DIMM+, no HDDs, no PCIe I/O cards)		
Idle input power	360.0 W	336.6 W
Peak input power running SpecJBB	440.0 W	411.0 W

TABLE: Sun SPARC Enterprise T5240 Server (1.4 GHz Processor, 16-Disk Capable) Power Specifications

General Specifications	AC Input Models	DC Input Models
Operating input voltage range (input voltage tolerance +/- 10%)	200 to 240 VAC, 50-60 Hz	-40 to -75 VDC
Maximum operating input current	At 100 VAC: <n/a>	At -40 VDC: 28.3A
Maximum operating input current	At 200 VAC: 6.4A	
Maximum operating input power	At 200 VAC: 1210.2 W	At -40 VDC: 1030.4 W
Maximum heat dissipation	4129.5 BTU/hour 4356.8 KJ/hour)	3857.23 BTU/hour (3753.1 KJ/hour)
Maximum standby power	26.0 W	24.3 W
Maximum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.4 GHz processor, with thirty-two 8 GB FB-DIMM+, 16 HDDs, 6 PCIe I/O cards)		
Idle input power	716.8 W	669.5 W
Peak input power running SpecJBB	1053.2 W	983.8 W
Minimum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.4 GHz processor, with eight 1 GB FB-DIMM+, no HDDs, no PCIe I/O cards)		
Idle input power	360.0 W	336.6 W
Peak input power running SpecJBB	440.0 W	411.0 W

TABLE: Sun SPARC Enterprise T5240 Server (1.6 GHz Processor, 8-Disk Capable) Power Specifications

General Specifications	AC Input Models	DC Input Models
Operating input voltage range (input voltage tolerance +/- 10%)	100 to 240 VAC, 50-60 Hz	-40 to -75 VDC
Maximum operating input current	At 100 VAC: <n/a>	At -40 VDC: 31.0A
Maximum operating input current	At 200 VAC: 7.0A	
Maximum operating input power	At 100 VAC: 1326.1 W	At -40 VDC: 1238.7 W
Maximum heat dissipation	4524.9 BTU/hour (4774.0 KJ/hour)	4226.6 BTU/hour (4459.3 KJ/hour)

TABLE: Sun SPARC Enterprise T5240 Server (1.6 GHz Processor, 8-Disk Capable) Power Specifications *(Continued)*

Maximum standby power	26.0 W	24.3 W
Maximum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.6 GHz processor, with thirty-two 8 GB FB-DIMM, 8 HDDs, 6 PCIe I/O cards)		
Idle input power	711.5 W	664.6 W
Peak input power running SpecJBB	1141.1 W	1065.9 W
Minimum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (4-core, 1.6 GHz processor, with eight 1 GB FB-DIMMs, no HDDs, no PCIe I/O cards)		
Idle input power	418.0 W	390.4 W
Peak input power running SpecJBB	524.0 W	489.5 W

TABLE: Sun SPARC Enterprise T5240 Server (1.6 GHz Processor, 16-Disk Capable) Power Specifications

General Specifications	AC Input Models	DC Input Models
Operating input voltage range (input voltage tolerance +/- 10%)	200 to 240 VAC, 50-60 Hz	-40 to -75 VDC
Maximum operating input current	At 200 VAC: 7.5A	At -40 VDC: 33.2A
Maximum operating input power	At 100 VAC: 1420.2 W	At -40 VDC: 1326.6 W
Maximum heat dissipation	4846.0 BTU/hour (5112.8 KJ/hour)	4526.5 BTU/hour (4775.7 KJ/hour)
Maximum standby power	26.0 W	24.3 W
Maximum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.6 GHz processor, with thirty-two 8 GB FB-DIMM, 16 HDDs, 6 PCIe I/O cards)		
Idle input power	786.8 W	734.9 W
Peak input power running SpecJBB	1235.2 W	1153.8 W

TABLE: Sun SPARC Enterprise T5240 Server (1.6 GHz Processor, 16-Disk Capable) Power Specifications *(Continued)*

Minimum Server Configuration Specifications Under Nominal Temperature and Voltage Conditions (8-core, 1.6 GHz processor, with eight 1 GB FB-DIMMs, no HDDs, no I/O cards)		
Idle input power	418.0 W	390.4 W
Peak input power running SpecJBB	524.0 W	489.5 W

Note – The maximum operating input current values are based on P / (V * 0.95), where P=maximum operating input power, V=input voltage. Example: 1210 / (200 * 0.95) = 6.37 A at 200 VAC. You can use this equation to calculate the maximum operating input current for your specific input voltage.

Related Information

- "Acoustic Noise Emissions" on page 10

Acoustic Noise Emissions

Declared noise emissions for both the Sun SPARC Enterprise T5140 and T5240 servers from Oracle are in accordance with ISO 9296 standards.

TABLE: T5140 Acoustic Noise Emissions

Description	Operating	Idling
Sound power level, LwAd (1 B = 10 dB)	8.1 B	7.6 B
Sound pressure level, LpAm (bystander positions)	70 dB	61 dB

TABLE: T5240 Acoustic Noise Emissions

Description	Operating	Idling
Sound power level, LwAd (1 B = 10 dB)	8.1 B	8.1 B
Sound pressure level, LpAm (bystander positions)	66 dB	66 dB

Related Information

- "Agency Compliance Specifications" on page 11

Agency Compliance Specifications

Refer to the *Sun SPARC Enterprise T5140 and T5240 Servers Safety and Compliance Guide* for a full list of agency compliance specifications.

Related Information

- `Sun SPARC Enterprise T5140 and T5240 Servers Documentation`
- *Sun SPARC Enterprise T5140 and T5240 Servers Safety and Compliance Guide*

Operating Environment Requirements

The operating environment requirements are the same for both servers. Your environmental control system must provide intake air for the servers that complies with the limits specified in "Environmental Specifications" on page 3.

To avoid overheating, *do not* direct warmed air:

- Toward the front air intake of the server
- Toward the server access panels

Note – When you receive your server, place it in the environment where you will install it. Leave the server in its shipping crate at its final destination for 24 hours. This resting period prevents thermal shock and condensation.

The servers have been tested to meet all functional requirements when operating in the operating environmental limits presented in "Environmental Specifications" on page 3. Operating computer equipment in extremes of temperature or humidity increases the failure rate of hardware components. To minimize the chance of component failure, use the server within the optimal temperature and humidity ranges.

This section has the following topics:

Electrical Power

Good practice is to connect each power supply to a separate circuit. This redundancy enables the system to remain operational if one of the circuits fails. Consult your local electrical codes for any additional requirements.

Related Information

- "Ambient Temperature" on page 12

Ambient Temperature

An ambient temperature range of 21°C (69.8°F) to 23°C (73.4°F) is optimal for server reliability. At 22°C (71.6°F) it is easy to maintain safe relative humidity levels. Operating in this temperature range provides a buffer if the environmental support systems fail.

Related Information

- "Ambient Relative Humidity" on page 13

Ambient Relative Humidity

Ambient relative humidity levels between 45% and 50% are the most suitable for data processing operations in order to:

- Prevent corrosion
- Provide an operating time buffer in the event of environmental control system failure
- Help avoid failures caused by the intermittent interference from static discharges that occur when relative humidity is too low

Electrostatic discharge (ESD) is easily generated and less easily dissipated in areas where the relative humidity is below 35%. ESD becomes critical when levels drop below 30%.

Related Information

- "Airflow Considerations" on page 13

Airflow Considerations

- Ensure unobstructed airflow through the chassis.
- Ensure that inlet air enters at the front of the server and exits from the back.
- Ensure that the server ventilation openings used for intake and outflow of air provide an open area that is at least 60% of the open area perforations across the front and rear of the server. This 60% minimum open area equates to the following dimensions, depending on the server model:

Minimum Open Area	Metric Units	US Units
SPARC Enterprise T5140 Server	112.2 cm^2 (425 mm x 44 mm)	17.4 in^2 (16.7 in x 1.7 in)
SPARC Enterprise T5240 Server	224.4 cm^2 (425 mm x 88 mm)	34.8 in^2 (16.7 in x 3.5 in)

- Allow a minimum of 5 mm (0.2 in.) clearance at the front of the system and 80 mm (3.1 in.) at the rear of the server when mounted. These clearance values are based on the inlet and exhaust impedance (available open area). These values also assume a uniform distribution of the open area across the inlet and exhaust areas. Use greater clearance values to improve cooling performance.

Note – The combination of inlet and exhaust restrictions such as cabinet doors, and the spacing of the server from the doors can affect the cooling performance of the server. You must evaluate the effect of these criteria.

- Take care to prevent recirculation of exhaust air within a rack or cabinet.
- Manage cables to minimize interfering with the server exhaust vent.

Related Information

- Sun SPARC Enterprise T5140 and T5240 Servers Documentation
- *Sun SPARC Enterprise T5140 and T5240 Servers Getting Started Guide*
- *Sun SPARC Enterprise T5140 and T5240 Servers Getting Started Guide (DC)*
- *Sun SPARC Enterprise T5140 and T5240 Servers Service Manual*

Index