

## PRODUCT CERTIFICATION

### SUN MICROSYSTEMS®

### Redundant Transfer Unit (RTU)

This document certifies that the Sun Microsystems Redundant Transfer Unit has been tested and found to comply with The Uptime Institute Site Uptime Network Fault Tolerant Power compliance specification Version 1.2.

The Redundant Transfer Unit (RTU) is an industry unique assembly designed to provide Redundant AC power to the Sun Server Cabinet. The RTU is made up of 2 independent Redundant Transfer Switches (RTS) which take two independent sources and distribute power to devices within the cabinet. If one AC source or if the RTS fails, the RTU automatically switches incoming power to the other RTS without interruption of service to the units internal to the cabinet.

Each RTS is a very fast switch with a microprocessor control and decision-making programming to take an incoming feed from either one power source or the other. It monitors the health of the incoming power and can switch between a failing feed and a good feed before the system would experience problems. Each RTS module is hot swappable and fitted with service LED's for increased availability and serviceability.

Testing of this product identified the following acceptable functional deviations from certain items in the specifications. Many of the deviations result from the RTU being an external switch designed to support single input equipment.

1. Product deviates from specification criterion no. 5, which requires that both AC power inputs must terminate within the manufacturer's equipment. ***This criterion does not apply to the certified product because that product is an external switch.***
2. Product deviates from specification criterion no. 9, which requires that for single- or three-phase power sources, with both AC power inputs available and with both inputs operating at approximately the same voltage, the normal load on each power source will be shared within 10% of the average. ***This criterion does not apply to the certified product because that product is a switch.***
3. Product deviates from specification criterion no. 10, which requires that for three-phase power source configurations, the normal load on each phase will be within 10% of the average. ***This criterion does not apply to the certified product because that product is a switch.***
4. Product deviates from specification criterion number 11, which requires that an external software alarm must be provided via the equipment's software or the host's operating system that will indicate within sixty seconds when an AC power source fails or is outside the manufacturer's published tolerance and when the abnormal condition is corrected. ***The reporting function of the certified product has not been tested. A test is planned to confirm this function. When the product's reporting function is confirmed, a revised certification will be issued.***

**SITE UPTIME NETWORK<sup>®</sup>**

**FAULT TOLERANT POWER COMPLIANCE SPECIFICATION VERSION 1.2**

The attached documents describe this specification and the testing procedure applied to this product.

This certification remains valid until July 1, 2002 unless replaced by a revised certification.

Fault tolerant power equipment refers to computer or communication hardware that is capable of receiving AC input from two different AC power sources. The objective is to maintain full equipment functionality when operating from an A and B power source or from A alone or from B alone. Equipment with an odd number of external power inputs (line cords) will generally not meet this requirement. It is desirable for equipment to have the least number of external power inputs while still meeting the requirement for receiving AC input from two different AC power sources. Products requiring more than two external power inputs risk being rejected by some sites. For equipment to qualify as truly fault tolerant power compliant, it must meet all of the following criteria as initially installed and at ultimate capacity and under any configuration or combination of options. (The designation of A and B power sources is used for clarity in the following descriptions)

1. If either one of two AC power sources fails or is out-of-tolerance, the equipment must still be able to start-up or continue uninterrupted operation with no loss of data, reduction in hardware functionality, performance, capacity, or cooling.
2. After the return of either AC power source from a failed or out-of-tolerance condition during which acceptable power was continuously available from the other AC power source, the equipment will not require a powerdown, IPL, or human intervention to restore data, hardware functionality, performance, or capacity.
3. The first or second AC power source may fail ten seconds after the return of the first or second AC power source from a failed or out-of-tolerance condition with no loss of data, reduction in hardware functionality, performance, capacity, or cooling.
4. The two AC power sources can be out of synchronization with each having a different voltage, frequency, phase rotation, and phase angle as long as the power characteristics for each separate AC source remain within the range of the manufacturer's published specifications and tolerances.
5. Both AC power inputs must terminate within the manufacturer's equipment.
6. Internal or external active AC input switching devices (e.g. static transfer switches) are not acceptable.
7. A fault inside the manufacturer's equipment which results in the failure of one AC power source shall not be transferred to the second AC power source causing it to also fail.
8. An internal Uninterruptible Power System (UPS) or internal power batteries (batteries for cache memory are acceptable) or other type of energy storage equivalent is allowable only for the purpose of a prompt, orderly shutdown. The existence and volt-ampere capacity of an internal UPS or batteries and the time required for a prompt orderly shutdown must be identified.
9. For single or three-phase power sources, with both AC power inputs available and with both inputs operating at approximately the same voltage, the normal load on each power source will be shared within 10% of the average.
10. For three-phase power source configurations, the normal load on each phase will be within 10% of the average.
11. An external software alarm must be provided via the equipment's software or the host's operating system that will indicate within sixty seconds when an AC power source fails or is outside the manufacturer's published tolerances and when the abnormal condition is corrected.
12. The manufacturer will supply a written certification that the equipment meets or exceeds this specification for fault tolerant power compliance.

Effective: November 15, 2000

SITE UPTIME NETWORK®

FAULT TOLERANT POWER COMPLIANCE SPECIFICATION VERSION 1.2

---

**TESTING PROCEDURES**  
*SUN MICROSYSTEMS®*  
**Redundant Transfer Unit (RTU)**

This product has undergone the following testing methodology in order to receive certification under this specification.

(Need testing description here.)