TwinSource

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Upgrade to 8 x 9's Availability!

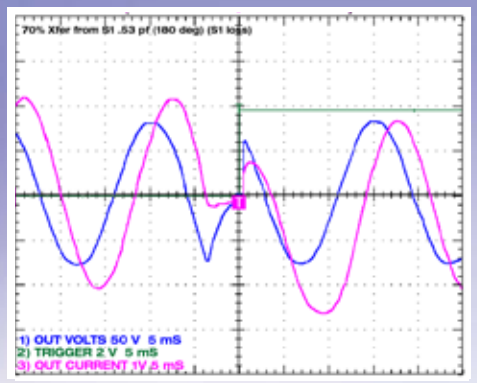
Have You Audited Your Sites For Single Cord Loads Content?
If Not, Then You Have Hidden Risks Waiting for a UPS Failure To Surface!

What does 8 x 9's availability mean? TwinSource RMSTS installed base of systems worldwide have clocked in at over 50 million hours of actual critical load operation hours without a load incident. This impressive operational data yields over 8 x 9's availability. To put this into a more tangible measure consider that a Tier IV data center with 4 x 9's availability yields an expected average outage per year of 52.56 minutes whereas a TwinSource protected rack yields an expected outage per year of only 0.031 seconds which reflects an improvement in reliability of 100,000: 1. These are not calculated or projected numbers. The 50 million hours is an actual measurement of "unit hours" across all sites.

TwinSource RMSTSs Installation in Racks

How does it do it? The system does this via an array of built-in redundancies, very conservative component ratings, as well as operator error prevention techniques. Contact TwinSource for details. Another impressive data point: No TwinSource systems have ever dropped a load because of an operator error. We do this with our optional operator error prevention interlocks. With these options you can't bypass these units to the wrong side of the SCRs, cause a source to source short, or bypass to a source that's outside your power quality limits and drop the load. This is because the switch will alarm you to not bypass before you get there if any of these situations exist.

How fast do they transfer and can they do this at 180 degrees? These are super fast switches. They transfer the load in less than ¼ cycle even if the sources are 180 degrees out of phase. Here is an actual trace with the sources out of phase by 180 degrees and Source 1 was failed to cause a transfer:



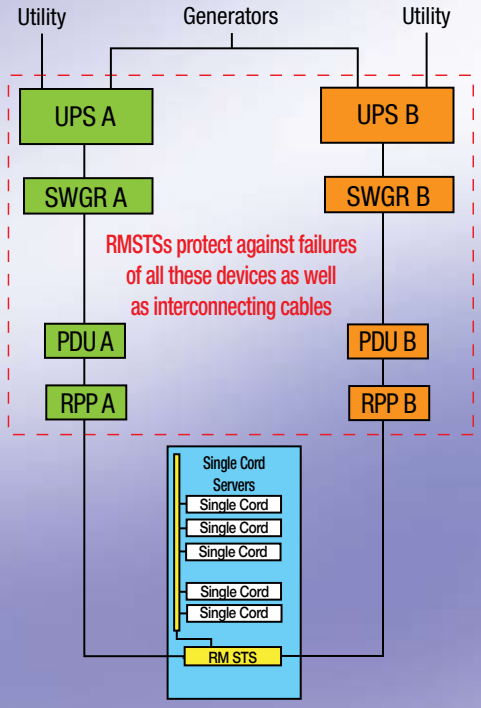
Conditions: Low power factor inductive load.
70% load, 180 degrees out of phase
S1 turned off to cause transfer to S2

Total sense and transfer time: 4.1 ms

How do you access them for maintenance actions? This is easy. The unit comes with a built-in outer bypass isolation module and a **plug-in electronic inner module** that plugs into the bypass module but can be withdrawn and replaced without bothering the load. There is no opportunity to make field repair errors because each time you replace the entire electronics. **This also reduces the MTTR to less than 2 minutes.** In less than 2 minutes of an alarm, you're back to normal operation. No troubleshooting or repairs are required. No waiting for someone to call you back or arrive on site is required. By the time you would get a call back on a trouble call, you're back to normal. See the electronic module partly pulled out in the photo below:

How do I implement them into my 2N system? This is simple and a 2N system is not required as the preferred source to the RMSTS can be a UPS and the alternate can be any other source including utility. **The predominant use of these systems is no doubt to protect the single corded loads.** As much as everyone tries to avoid single corded loads, many do exist in most data centers and this becomes your weak link that can cause major disruptions. Keep in mind that not only the single cord servers are disrupted but so are the ones these servers are connected to as well. **If there has never been an accurate audit of your single cord load content across your sites you have hidden risks waiting to pop up as soon as you have a power disruption in one of the N sides.** Why? Because while your dual cord loads are fed from 2 UPSs and are always protected, some or typically 1/2 (if evenly distributed) of the single cord ones will drop as soon as one of the UPSs fails. Dual cord loads are also at risk if you have to take a distribution device (a PDU, RPP, or any panel) out of service for maintenance and out of

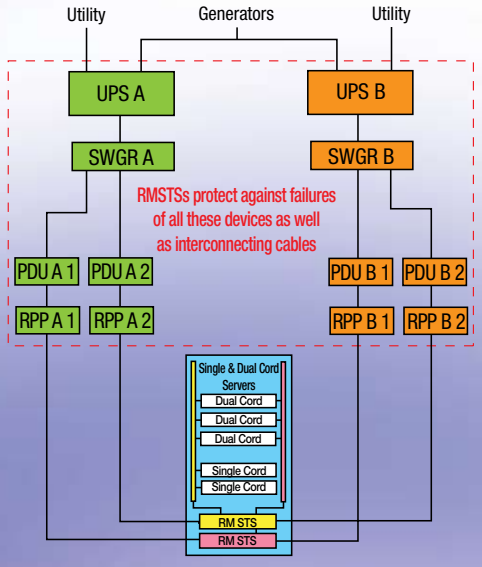
sheer bad luck the opposite side UPS fails (more on this later). Rather than wait until a UPS fails to discover how bad this can be, be proactive and afford your single cord loads the same level of reliability as your dual cords. A good design aims for uniform reliability of devices across the floor and the infrastructure. The diagram below shows the simplest application of RMSTSs to protect single cord loads:



Typical 2N single line diagram showing the 2N UPSs, distribution devices & a typical rack with single cord content shown. Dual cords are simply fed directly from the RPPs (not shown above).

A MINI-2N Packaged System - You can apply the above configuration to form a "MINI-2N" for a small data room using two small 50-200KVA UPSs and RMSTSs in every rack thus benefiting from the same reliability advantages of a large 2N arrangement.

Super Critical Dual Cord Protection - The diagram below shows one typical way the TwinSource RMSTS can be applied to all single corded loads as well as to the super critical dual corded "must always have on-line no matter what" loads. Alternatively you could double up on your critical servers but this requires double the capital & rack space and generates more than double the HVAC load.

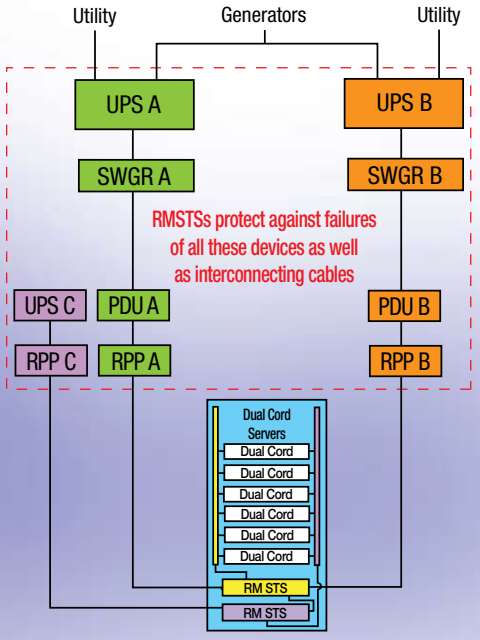


Typical 2N single line diagram showing the 2N UPSs, distribution devices & a typical rack with both single and some "super critical" dual cord loads. Other dual cords are fed directly from the RPPs. Note that in this case any PDU or RPP can be isolated for service without losing the 2N capability which would otherwise be lost.

In the above figure it is clear that the "super critical dual cords" can also be provided with ultimate protection using a third much smaller UPS (sized only for a few racks).

Feed the first "Switch 1" by the same UPSs A & B (see below) and feed its output to Switch 2 as well as to Cord 1 in the rack and the second source of Switch 2 is fed from a UPS C and its output is connected to Cord 2 in the rack. Connect the dual cords between the cords and now they can benefit from 3 sources. In a 6 megawatt data center for example you can feed all regular dual and single cords from the large UPSs A and B and the most super critical dual & single cords also from a 3rd UPS that is only rated at say 50-200KVA (= the total KVA of only the super critical loads).

This provides an unmatched level of availability with 3 source capability. This configuration is shown below:



Typical 2N single line diagram showing the 2N UPSs, distribution devices & a typical rack with only the super critical dual cord loads fed from a 3rd UPS. Other less critical dual cords are fed directly from the RPPs from only 2 UPSs.

Questions? If you'd like to implement RMSTS solutions to increase your availability numbers and be rid of concerns over your single cord load loss impact you can reach us via our web site at www.twinsource.net. For quicker support you may contact us below.

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