Eaton 9395P UPS
Service Life Extension Program

For customers with aging 9395Ps (10+ years old) who want to reset the clock, avoid risk of electronics wear-out and extend reliable service life

9395P UPSs have been manufactured since 2016. If properly maintained, 9395Ps can last 15–20 years with preventive maintenance and proactive replacement of consumable parts. However, like all electronics, UPS electronics have an increasing risk of "wear-out failure" over time as they are susceptible to high heat, dust/dirt collection and humidity. For customers with aging 9395Ps (10+ years old) who want to avoid risk of electronics wear-out, Eaton offers the 9395P Service Life Extension Program (SLEP) and recommends replacing your UPS. With the SLEP, **Eaton in essence installs a new UPS with all new and improved electronics inside your existing UPS's frame.** Consumable parts (capacitors, fans and batteries) are optionally replaced as needed at the same time. The service comes complete with a one-year parts and labor warranty and an entitlement to purchase full-service coverage for a minimum of 10 years after the SLEP installation (reviewed annually for extension). Because the 9395P SLEP does not require an electrical contractor, it can save considerably on the overall site refresh costs and be completed quickly in one day.

Frequently asked questions

Q: What do UPS electronics do?

A: Power electronics are the heart of a UPS. They perform the conversion of power from AC to DC and then DC back to AC in a double-conversion system. These devices contain the high-current, high-speed semiconductors that are the hottest, hardest-working components of any UPS. Control electronics handle all of the features and functions of the UPS and house the firmware that runs the day-to-day UPS operation.

Q: Are there any UPS applications that increase stress on UPS electronics?

A: Yes. UPSs operating with constant heavy loads, or those that support frequent load fluctuations (large motors, HVAC, medical imaging equipment) can place the UPS electronics under more stress and accelerate the wear of the internal components. UPSs that endure frequent battery discharges add stress, too. And of course, heat is the enemy of any electrical device, so high ambient temperatures can increase the risk of early failure.

Q: What are the UPS electronics that are susceptible to wear-out failure?

A: The UPS electronics that are susceptible to wear-out failure as the unit ages are power modules, power supplies, control boards, interface boards, resistor boards and communication service boards. Consumable parts like capacitors, fans and batteries wear out as well, but are typically proactively replaced on defined schedules.

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Q: Can UPS electronics degrade over time under normal use?

A: Yes, while they contain no moving parts, they consist of capacitors, circuit boards and high-power IGBT transistors. These components are susceptible to degradation over time and can be sensitive to fast-changing humidity or to airborne chemical contaminants and corrosives. For example, long-lasting high-temperature/high-humidity conditions in a power semiconductor can allow the formation of dendrites, which create a short circuit and cause device failure. Long-term metallic dust buildup on the outside of electrical components can also create the same short circuit condition with the same resulting failure.

Close-up photo of an IGBT inside a power module that overheated due to effects of dirt and dust collection over time.

Q: Can you tell if a UPS electronic component is going to fail?

A: Eaton technicians have the tools and techniques to evaluate the condition of these electronics. However, it is extremely difficult to assess the internal condition of an electronic component without full disassembly, which is impractical. PredictPulse™ monitoring can further assist the technician in evaluating the condition of the electronic component.

Q: What is the benefit of a full UPS electronics replacement?

A: The benefit of electronics replacement for UPSs older than 10 years is to reduce the risk of internal component failure and to extend the reliable service life of the UPS.

Q: What happens when a UPS electronic component fails?

A: Depending on the specific component, failure could result in an immediate transfer of the critical load to utility bypass or to other UPS modules in a parallel redundant system. In a single-module (non-parallel) UPS, a transfer to bypass would leave the critical load unprotected. If a UPS electronics component fails, replacement must be scheduled with an Eaton service technician.

Q: Are UPS electronics covered under a service contract?

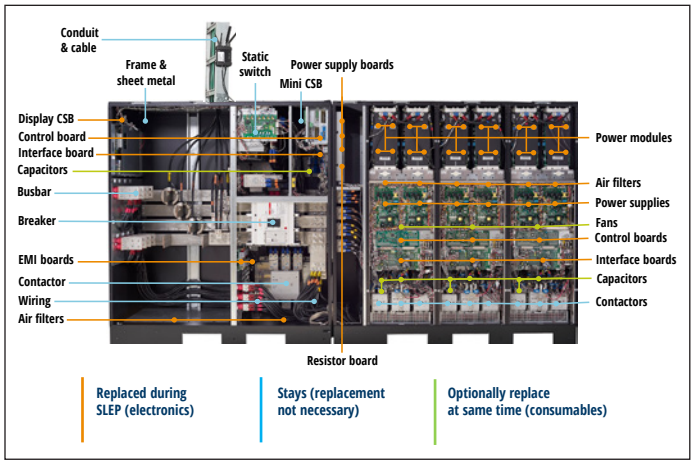
A: Yes, UPS electronic parts are replaced under a full parts and labor coverage contract when they fail. Proactive full replacement of UPS electronics is an optional service.

Q: When should I consider replacing my UPS or the electronics inside my UPS?

A: Depending on environmental conditions, UPS electronics may begin to show internal component wear after about 10 years. While internal components could be replaced individually, best practices dictate that the assembly be replaced. Even in the absence of an electronics failure, proactive replacement will enhance system reliability and ensure peace of mind.

Eaton technicians use a variety of tools and techniques to evaluate the status of UPS electronics and can use the data gathered during preventive maintenance visits or via the PredictPulse capability to recommend proactive UPS or UPS electronics replacement.

Running a UPS in power efficiency modes like Eaton's Energy Saver System (ESS) will lengthen power component life. When the UPS is in ready-to-serve mode, the modules are subjected to less heat stress.



900 kW 9395P example

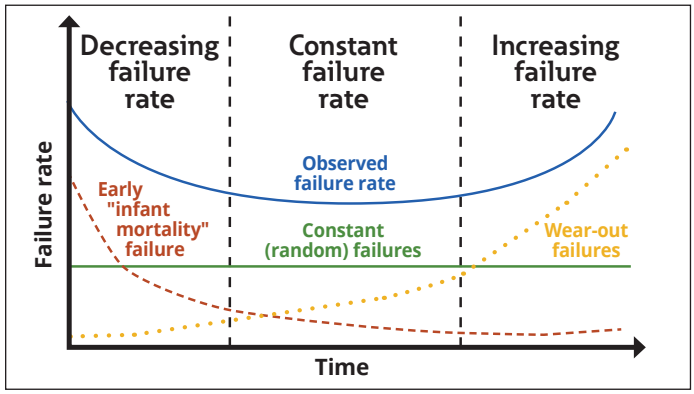


Chart illustrates typical Weibull "bathtub curve" failure rate concept showing an increasing risk of wear-out failure as a product ages.

Q: Why would you replace electronics vs. a complete UPS replacement?

A: Replacing the electronics inside your existing UPS can save considerable expense and time as the existing UPS system does not have to be removed and a new UPS system does not have to be installed by an electrician with all new conduit and connections. This reduces site planning and permitting time and can be performed quickly with the UPS being offline for only one day. Replacing the electronics also allows the user to retain their integrated accessories and battery cabinets.

Q: When should I consider replacing the electronics inside my UPS?

A: As part of its standard preventive maintenance routine, Eaton recommends an evaluation and consideration of UPS electronics replacement after 10 years of service. It is advantageous to align electronics replacement with capacitor, fan and battery replacements to minimize disruption and cost.

Q: Are there additional benefits of upgrading UPS electronics?

A: Yes, in addition to installing all-new components, this upgrade includes enhancements that were not available when the 9395P was originally purchased. Essentially, you are receiving the latest generation of electronic components, which have been improved over time to deliver enhanced performance, reliability and efficiency.

Q: How long will Eaton provide full service coverage on the 9395P UPS?

A: For customers who invest in the 9395P SLEP, they are entitled to purchase full-service coverage from Eaton for 10 years after the date of the 9395P SLEP installation. This extends the current 9395P EOSL date for customers who purchase the SLEP. Furthermore, this new 9395P SLEP EOSL date will be reviewed annually for potential extension.

Q: Can UPS electronics be monitored by my DCPM software?

A: These electronics do not signal an increased risk of failure via an alarm, so a device approaching failure may not trigger alarms that can be monitored using DCPM software.

However, if the temperature or load level increases beyond design limits, an over-temperature or overload alarm can be monitored using DCPM software.

To learn more about Eaton's UPS SLEP offerings, visit
Eaton.com/ModernizationServices

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