Thought Leadership
White Paper

Enhance reliability and uptime of data centers with intelligent automatic transfer switches

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The enormous global appetite for connectivity is creating the need for more data, storage and data centers – and, in turn, the need for more electricity and stronger reserves to protect critical operations for businesses, organizations and service providers. And as the data consumption continues to grow, the likelihood of power system failures leading to unplanned downtime pose as a threat to data center companies. Therefore, data centers are adopting advanced technologies such as intelligent panelboards & switchboards and automatic transfer switches (ATS) during the initial design and scaling-up phases.

Powering Business Worldwide

Key challenges in the data center segment

Data center customers are facing multiple challenges that can be mitigated with the deployment of an intelligent ATS, like:

1. **Uptime:** A key requirement for data center owners and facility managers is uptime; therefore, data centers would typically require multiple sources of electricity for uninterrupted power supply. Solutions such as an ATS form a critical component of power infrastructure as they aid in effectively redirecting the power load to an alternate source of electricity, primarily during a power outage or planned maintenance.

2. **Redundancy:** Multi-tenant data centers (MTDCs) are experiencing increased redundancy across inter-connected facilities by effectively shifting the workloads to either different parts of a facility or an entirely different facility. Therefore, the data center decision-makers are reconsidering the downstream architecture of the power chain in terms of reliability and costs associated with the components resulting in the replacement of static transfer switches with automatic transfer switches.

3. **Operational reliability:** Even a minuscule power outage in a data center can lead to instant loss of business, downtime and added costs; so, data center owners are looking for solutions that offer predictive maintenance with monitoring software that can analyze the performance and improve the reliability, safety and efficiency of operations. This is a major factor behind the adoption of ATSs amongst data center customers, as it results in enhanced reliability and mitigates potential downtime.

How can an intelligent automatic transfer switch help solve challenges within data center applications?

Figure 1. Bypass isolation automatic transfer switch

An approach to improving end-to-end resource efficiency of the data center power infrastructure is to start by acquiring smart and connected equipment. Automation is implemented by using the smart equipment and supported by data collection and intelligent monitoring. Gathered historical and real-time data is used to generate analytics to inform decisions and implement strategies.[1]

Redundancy is a key requirement in mission critical facilities such as data centers wherein maintenance, testing, and inspection can be performed while constantly supplying power to the load. In order to serve the changing approaches of a data center's decision-makers, power management companies offer a comprehensive ATS portfolio – which includes bypass isolation transfer switches – and controllers which are designed for monitoring and controlling transfer switches.

Data centers are gravitating towards predictive insights that enable condition-based maintenance thereby minimizing human interaction, reducing risks and operational expenses by limiting the workforce in the data center facility and extending the maintenance period. The ATS controllers bring intelligence, adaptability, and enhanced supervisory and programming capabilities to the transfer switch offering which makes it a suitable solution for data centers.

Furthermore, the monitoring capabilities offered by controllers help to support facility personnel inside the data centers by remotely evaluating the load transfers between power resources, voltage and frequency of the transfer switches. A smart controller offers features like integral load monitoring, load bank control, selective load shed, normal source connect/disconnect and emergency source disconnect which helps data center owners and operators to efficiently understand and manage the power load resulting in increased uptime and reliability.

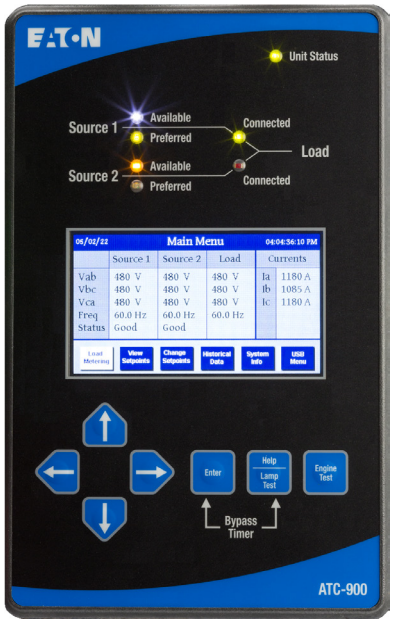

Figure 2. Automatic transfer switch controller

Automatic Transfer Switches

Conclusion

Modern data centers require enhanced automation, predictive insights, AI-enabled analytics and a smooth transfer of load to a stable power supply in the event of a potential power failure. Leading power management companies have a wide range of intelligent transfer switches and controller solutions thereby serving as a one-stop shop for data center owners and operators to improve uptime, reliability, power quality and safety while meeting their budgetary needs.

About Eaton

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References

[1] Improving resource efficiency and reliability of Data Center power infrastructure

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