

DATA CENTER PROTECTION SYSTEM

Prediction, Detection, Protection

1 IN 3 DATA CENTERS EXPERIENCE UNPLANNED OUTAGES EACH YEAR

Data center outages are becoming more frequent as complexity increases. In a 2018 survey of 271 respondents, one third of outages cost over \$250,000. **80% of respondents believed they were preventable.**

Every data center experiences failures within the system. The problem occurs when these failures cause unplanned outages within server centers leading to loss of data and reduced mission readiness.

Of the top 10 outages costing over \$5 million, half were due to power or cooling failure.

Regardless of root cause, the goal is to be able to prevent, predict, detect, and manage those failures such that the likelihood of an unplanned outage is minimized.

CAUSES OF 100 MAJOR PUBLIC OUTAGES (JAN 2016 - JUN 2018)



THE DATA CENTER PROTECTION SYSTEM SOLUTION

FROM ACRES AT SEA

The Leonardo DRS Advanced Data Acquisition and Control System (ADACS) has a long history of protecting the Navy's most valuable vessels before arc faults occur with a patented precursor detection system.

TO ACRES ON LAND

The Data Center Protection System (DCPS) emerges as the next generation of this proven product to deliver comprehensive hardware failure prediction and precursor detection across all aspects of data center hardware and utilities.

DATA CENTER PROTECTION SYSTEM

Leonardo DRS' Data Center Protection System (DCPS) adds peace of mind to existing or new systems. The DCPS can predict failures before they occur using predictive modeling and failure precursor detection. Overstressed or failing hardware components can be sensed with the revolutionary comprehensive sensor suite so that data center personnel can maintain equipment or receive warning before system failure. The DCPS utilizes the same arc-fault prevention and detection system currently used on the Navy's largest vessels, capable of providing automated high-reliability changeover during an arc-fault event. Combined with CRAC, generator, and UPS monitoring sensors, the DCPS offers the flexibility to protect and predict failures throughout data centers. Our DCPS system is comprised of a unique and complimentary collection of sensors monitoring and protecting systems from failures and total destruction. Table 1 summarizes the sensors included in a sample base DCPS system and the protection provided. The diagram below (Figure 1) provides a sample, high-level schematic of a core DCPS protection system.

Contact us for detailed information on a system to protect your specific data center environment.

SYSTEM	SENSOR	CAPABILITY
Utility Power, UPS, Switchgear	Ionization Chamber	Prevention of Arc Faults by Precursor Detection
Utility Power, UPS, Switchgear	Light and Fiber Optic	Detection of Arc Faults
Rack Mount Servers, UPS, Switches, and Other Air Cooled Rack Mount Hardware	Comprehensive Rack Sensor Suite	Detection of Server Level Failures Precursor Detection Prior to Device Failure
Computer Room Air Conditioning	CRAC Sensor Suite	Detection of Anomalies in CRAC Systems
Generator Sets	CANBUS, Audio and Vibration	Detection of Anomalies in Rotating Power Systems

Table 1: Total System Protection

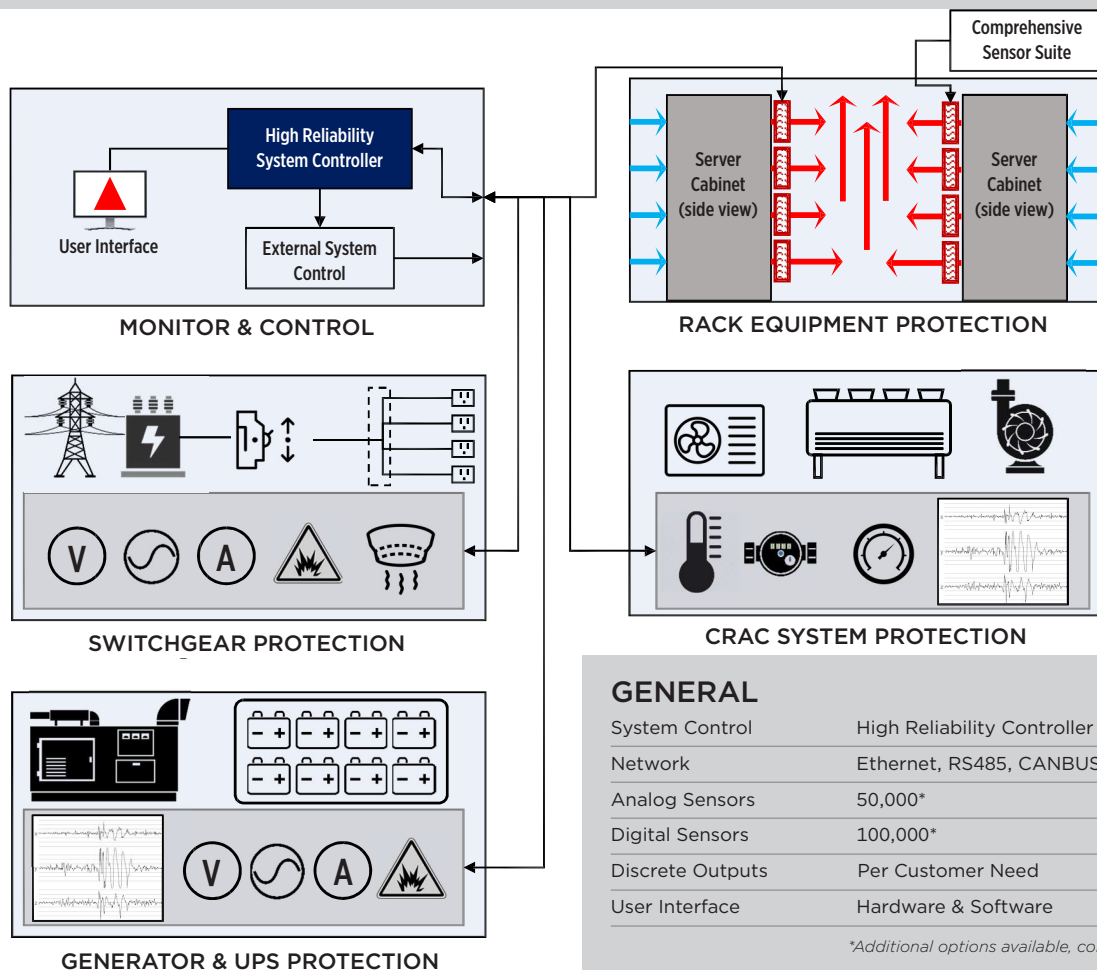


Figure 1: Sample Data Center Protection System Implementation

PROVEN PERFORMANCE

The Data Center Protection System is the next generation Advanced Data Acquisition and Control System (ADACS). ADACS is Naval Sea Systems Command (NAVSEA)'s third generation arc flash detection system and is currently trusted to protect the power grids of some of the most valuable vessels of the U.S. Navy combatant fleet. This system is here now and ready to protect the most valuable vessels of our U.S., cyber community: our data centers.

THE TECHNOLOGY DIFFERENCE

ADACS is a holistic system, able to utilize a wide range of sensors to predict failure precursors as well as detect catastrophic failures in the power system and environment within the data center. Self-monitoring allows the system to notify operators if any part of the ADACS system requires maintenance, and robust interlocks prevent any single failure within the hardware from triggering a false event.

Prevention of arc-faults in the power distribution system before they occur is achieved using Leonardo DRS' patented thermal ionization monitoring system. This system detects particles characteristic of overheated connections within power distribution gear, a primary cause of arc-faults. Detecting overheating events enables maintainers to safely service switchgear before an arc-fault can occur. These sensors provide a safe alternative to the practice of opening and observing live switchgear with thermal cameras during maintenance – a practice that is both dangerous and does not provide continuous monitoring.

ADACS is also capable of monitoring a wide range of environmental sensors and can provide both maintenance alerts as well as directly activating external safety or control systems. Utilizing an RS-485 network with distributed sensor processing, ADACS maintains physical isolation from data and can expand to monitor over 50,000 analog sensors and over 100,000 discrete inputs on a single host system. ADACS is able to meet the monitoring and prevention needs of your data center.



ADACS protects the Navy's most valuable vessels including: Gerald R Ford class aircraft carriers, Virginia class fast attack submarines, Columbia class ballistic missile submarines, Zumwalt and Arleigh Burke class guided missile destroyers, Littoral Combat Freedom class ships, and America Class amphibious assault ships.



The architecture of ADACS provides a simple interface for incorporating many more sensors. While wideband photo detectors and thermal ionization detectors are the preferred sensors for detecting and preventing arc faults, the ADACS interface allows any sensor to be easily integrated.

Airborne & Intelligence Systems

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