The next generation of building automation and electrical controls: industrial strength, mission critical converged solutions for data centers.

ABB Ability™
Data Center Automation
Building a data center with control and monitoring systems from multiple vendors wastes time, introduces risk and compromises performance. ABB’s single platform approach brings improved reliability, energy efficiency, asset utilization and personnel productivity.
Why choose ABB
Serving mission critical industries for over 100 years

An industrial heritage that brings new and innovative solutions to data centers.

ABB is the largest enterprise asset management and distributed control system supplier in the world. The company’s flagship process automation system, ABB Ability™ System 800xA has an installed base of more than 10,000 systems worldwide.

It is System 800xA that provides the core technology within ABB Ability™ Data Center Automation. It allows ABB to deliver industrial-strength, mission critical converged solutions for mechanical controls (BMS), electrical monitoring (EPMS), electrical controls (ECS) and DCIM to the data center.

A worldwide service organization that stands ready to support your data center, wherever it is.

ABB’s global service network is strategically positioned to provide support, logistics and service operations using standard processes and tools, to ensure our services are delivered quickly and reliably anywhere in the world.

Tailored service agreements enable us to provide the exact mix of lifecycle services needed for mission critical 24/7 operations including spare parts, technical support, training, emergency on-site support, preventive maintenance and more.

A wide variety of optimization services and analytics are available to ensure efficient operations and maximum uptime.
Why take a new approach?
Because the old way is holding you back

Traditionally, data centers have been designed and delivered with “silos of automation” that not only increase risk and cost, but create significant construction and operational inefficiencies.

During construction, this means one controls team bidding on, designing, installing and commissioning your electrical controls with another, from a separate vendor handling mechanical controls, and yet another implementing the DCIM system. This results in duplicated effort, increased cost and lengthy delays.

For operations, the result is multiple systems to deal with, none of which are integrated. To make matters worse, new systems get added to this mix as the data center grows. The end result is lack of insight into the behavior of your data center, and a lack of ability to optimize it.

The industrial world recognized this lack of system collaboration as a problem years ago, and has developed robust and flexible solutions that are proven-in-use.

Collaborative automation systems - where people, systems and equipment work together seamlessly - are now the industry norm. The payback is improved reliability, energy efficiency, asset utilization and personnel productivity.

ABB has led the way in developing collaborative solutions for automating all kinds of mission critical facilities, and is number one in the world for distributed control systems.

Facilities engineering, operations & planning
ABB Ability™ Data Center Automation
ABB’s converged solution for the data center

ABB Ability™ Data Center Automation has all the functionality of every necessary control and monitoring tool required to run a data center in a single, industrial platform. Based on the ABB Ability™ System 800xA platform, this data center solution is built to exacting standards of reliability and performance, and is highly secure, expandable, open, modular and maintainable.

It’s proven-in-use capabilities make building and operating a data center more efficient, through:
- Common tools for engineering and configuration
- Single consistent data model for all systems
- “Single pane of glass” view
- Role-based visualization of data and analytics
- Standards-based communication protocols to enable easy integration of applications.

With the right converged solution, it’s easy to add new equipment and capabilities at any time.

There is no need to add new separate systems in order to integrate in-row cooling, additional environmental sensors, physical security systems, server monitoring or dashboards and analytics.

New equipment can be added to the system at any time, meaning the system can continue to be expanded and enhanced long after construction is complete.

Since ABB Ability™ Data Center Automation has a standards-based integration platform at its core, it is completely technology and vendor neutral, and adding new mechanical or electrical equipment or software packages is a matter of configuration, not custom programming. In addition to a full range of hardwired I/O options, it supports all common protocols (Modbus, BACnet, SNMP) as well as advanced protocols such as IEC61850.
Advantages of a converged solution

ABB Ability™ Data Center Automation

A converged system, implemented with hardened and proven components and delivered by a trusted and experienced partner, delivers benefits during all phases of a data center’s lifecycle.

### ABB approach vs. Traditional approach

<table>
<thead>
<tr>
<th><strong>ABB approach</strong></th>
<th><strong>Traditional approach</strong></th>
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<tbody>
<tr>
<td>Single platform technology:</td>
<td>Different technologies and systems for mechanical and electrical:</td>
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<tr>
<td>• Provides easy integration between EPMS, ECS and BMS</td>
<td>• Adds cost, risk and inefficiencies</td>
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<tr>
<td>Vendor agnostic with configurable integration of data and software applications:</td>
<td>Multiple suppliers:</td>
</tr>
<tr>
<td>• Faster installation, commissioning and fault finding</td>
<td>• Tied to demands from individual equipment suppliers</td>
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<tr>
<td>Converged solution means new equipment and capabilities can be added at any time:</td>
<td>Silos of automation:</td>
</tr>
<tr>
<td>• No need for custom system integrations</td>
<td>• Adding a new system means adding another silo</td>
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<tr>
<td>Solution based totally on ABB products:</td>
<td>System integrators deliver solutions using third party products:</td>
</tr>
<tr>
<td>• Tested and field-proven, significantly reducing risk</td>
<td>• Bespoke system integration adding risk and cost</td>
</tr>
<tr>
<td>• Reduced troubleshooting and rework delays</td>
<td>• Limited responsibility for the entire solution</td>
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<tr>
<td>Sole supplier:</td>
<td>Multi-team commissioning:</td>
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<tr>
<td>• One site team with expertise on all systems</td>
<td>• One vendor and installation crew per system</td>
</tr>
<tr>
<td>• One project manager for increased accountability</td>
<td>• Multiple teams for the builder to manage</td>
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<tr>
<td>• Avoid conflict and blame between vendors</td>
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Collaborative control for data centers
Single window collaboration and efficiency

A single window on the world
Whether ABB’s industrial workstation - the Extended Operator Workplace (EOW) - or a single display on a handheld device is selected, the ABB Ability™ Data Center Automation system gives operators:

- Intelligent navigation capabilities
- Alarm management functionality
- Integrated video and communications features
- Integrated information from all data center systems through one interface
- Dynamic and configurable views based on user role

In addition, ABB provides control room design services to help minimize footprint while optimizing the operator experience with a focus on human factors such as ergonomics and operator well-being.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tr>
<td>Integration for legacy solutions</td>
<td>Consolidated view of all data center systems</td>
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<tr>
<td>Collaboration platform for operations</td>
<td>Improved asset performance</td>
</tr>
<tr>
<td>Integrated control environment for EPMS, ECS and BMS</td>
<td>Consolidated data for optimum decision making</td>
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<tr>
<td>Ready for remote connectivity</td>
<td>Enterprise view and/or remote access to expertise</td>
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Building Management System (BMS)
Automatic control and scheduling

In today’s data centers, an efficiently managed building isn’t enough. An integrated building management solution is required in order to provide real-time information to multiple decision makers to maintain 24x7 operations, ensure safety and security as well as to protect and manage the data center assets.

**Industrially proven and reliable controllers**
Highly scalable, fault tolerant and modular controllers and I/O provide control of the mechanical infrastructure of a data center. This industrially proven control hardware ensures you can achieve the level of availability and maintainability that is required in a mission critical data center.

<table>
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<th>Features</th>
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<tr>
<td>Solutions based on industrial controls technology</td>
<td>Powerful 24x7x365 operations</td>
</tr>
<tr>
<td>PLC to fully hot-swappable controllers</td>
<td>A full range of control options</td>
</tr>
<tr>
<td>“Everything redundant” architecture (optional)</td>
<td>System can survive failure of any component</td>
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<td>Vendor neutral hardware integration</td>
<td>Flexibility of choice for hardware</td>
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<tr>
<td>Built-in tools to review and monitor control logic</td>
<td>100 percent user maintainable throughout the lifecycle</td>
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ABB controllers are:
- Reliable, fault tolerant and resilient
- Redundant controllers / CPU
- Redundant I/O interfaces
- Redundant network
- Redundant power supplies
- Hot swappable modules
**Electrical Power Management System (EPMS)**

Electrical monitoring from substation to chip

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**Monitoring every electrical sub-system**

Whether it’s deployed as a stand alone EPMS or part of a converged system, ABB Ability™ Data Center Automation provides superior electrical monitoring, reporting and analytics. This ensures that the electrical system performance is optimized, while identifying issues before they escalate.

With this product, you can:
- Manage electricity capacity
- Analyze the quality of power in the data center
- Visualize how energy is used
- View performance trends
- Identify potential problems

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<td>Supports all common protocols</td>
<td>Seamless access to data from all common meter vendors</td>
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<tr>
<td>High speed communication and data storage</td>
<td>All data is collected and presented in real time</td>
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<td>Extensive power quality analysis tools</td>
<td>Intuitive troubleshooting and baseline data capture capabilities</td>
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<td>Live single-line diagrams</td>
<td>Maintenance support</td>
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<tr>
<td>Drill down into equipment details</td>
<td>Single source for system information</td>
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<tr>
<td>Sophisticated alarm management tools</td>
<td>Fast-fault detection</td>
</tr>
<tr>
<td>Vendor-neutral power quality meter (PQM) interface</td>
<td>Harmonics and disturbance data can be read from any third-party meter</td>
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EPMS visualization of the electrical system with deep dive analytics
Managing electrical loads
Today’s data centers need to minimize energy costs and maximize capacity. This can be achieved through:

- Integrating onsite solar or wind generation to minimize grid demand
- Using a Battery Electrical Storage System (BESS) to avoid peak demand charges or shift load to lower rate periods
- Implementing a load management system to offload non-critical systems during peak demand periods, or for scheduling load shedding or restoration after a grid failure.

The ECS built within the ABB Ability™ Data Center Automation provides the ability to flexibly and reliably manage and control electrical infrastructure.

Using high-speed, redundant controllers and state-of-the-art communications protocols such as IEC61850, ABB delivers robust, standardized solutions, configured to meet the specific needs of any data center.
ABB in the Data Center Industry
Empowering integrated operations

ABB’s converged solution drives operational savings with integrated functions for both operations and maintenance.

Perhaps the greatest benefit of ABB Ability™ Data Center Automation is the wide range of integrated applications and functions that can be applied across the entire converged system. Using a common data model, functions such as advanced navigation, alarm management, history, condition-based maintenance, CMMS integration and operations management can be implemented with a few clicks. These functions will make both operations and maintenance more efficient:

**Predictive Maintenance**
A shift towards more predictive maintenance is crucial for driving down the cost of maintaining data centers. With ABB’s built in condition monitoring and reporting features, information is collected, aggregated, analyzed, and compared to historical data to provide advanced warning of degrading equipment performance or impending failure.

**CMMS Integration**
ABB Ability Data Center Automation integrates to third party Computerized Maintenance Management Systems (CMMS) such as Maximo and SAP PM. Through this integration, maintenance data such as active work orders and work order history can be shared seamlessly between the ABB Ability™ Data Center Automation system and the CMMS. Work orders can be automatically generated based on triggers determined by the condition monitoring module, saving time and eliminating errors.

**Operations Management**
ABB’s integrated operations management functionality ensures complete tracking of processes that are typically handled with paper, spreadsheets and emails. Features like the electronic logbook and operator rounds tracking allow operations teams to eliminate paperwork and ensure seamless communication over shift changes.

These unique operational features are part of the ABB Ability™ Data Center Automation solutions suite and deliver significant benefits for operations and maintenance.