

Is there an affordable building automation system I can customize to meet my needs?

APOGEE® with BACnet builds upon past investments, responds to present challenges, and anticipates future needs.

Answers for industry.

**SIEMENS**



# Scalability made simple

Achieving high-performing, comfortable, and energy-efficient facilities is seamless with the APOGEE® Building Automation System with BACnet.

Regardless of the size of your facility, or your control requirements, APOGEE provides the scalability and flexibility your facility needs for today and tomorrow.

From standard to complex applications, APOGEE provides a comprehensive and affordable solution that expands and grows with your facility.

Whether you are building a new facility, or expanding, upgrading, or optimizing existing facility systems, a customizable APOGEE solution makes buildings of all sizes more comfortable, safe, productive, energy-efficient... and less costly to operate.

## **Freedom from a proprietary system, adaptability for today and tomorrow**

Your future is driven by higher energy costs, simplification of climate control, and the promise of wireless and digital communications. Siemens prepares you for the latest technological advances with innovative and cost-effective building automation solutions.

APOGEE's open architecture gives you control of all systems and equipment — from any location — and allows you to realize the full advantages of integrated systems. System scalability ensures your future expansion demands, energy-efficiency goals, and operating budget needs are realized – whether you are operating a small facility, large facility, or multi-site campus.



**Installing two PXC Compact controllers with Web servers in an average 60,000 sq. ft. school provides up to 60% savings on installation costs.**

**A larger building would save up to 20% by installing five PXC Compact or Modular Controllers. (List price comparison.)**

Management Level

Insight® APOGEE Workstation



Web Client and Wireless Devices



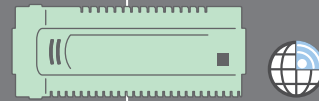
BACnet/IP and Web Services

Automation Level

PXC Compact Series



PXC Compact and PXC Modular Controllers



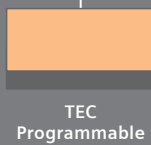
Field Level

BACnet MS/TP

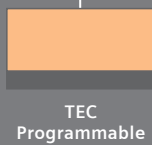
BACnet MS/TP



PXC Compact Series



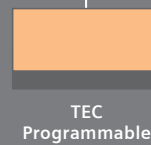
TEC Programmable



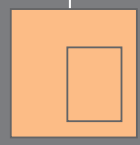
TEC Programmable



TEC Controller with Actuator



TEC Programmable



Point Pickup Module

With the APOGEE System's Web-based BACnet solution, every level of your system is always accessible and configurable.

# Cost-effective, efficient and customizable solutions

Scalable and fully programmable, our complete selection of BTL-listed components means your APOGEE® Building Automation System is uniquely designed to meet your exact building needs. Tools and programming environments are consistent and integrated into the system for ease of use and system configuration efficiencies.

## Two User Interface Options!

### PXC Modular and PXC Compact Web server Interface for BACnet Networks

Cost-effectively and efficiently view, configure, command and control your system from any location. These web-enabled controllers allow remote Internet access of managed network information. Get reports and graphs representing historical trend information via an integrated Web server interface. Configure field panels and troubleshoot through the Web for speedy and cost effective system start-up and servicing.

With the Web server, the facility operator can easily monitor and control the APOGEE system through an intuitive Web-based user interface that is ideal for small or remote facilities.

Internet security is managed via a 32-bit encrypted password limiting access to only users with administrator provided access rights.

### Insight® Workstation with Enhanced Graphics Option and Energy Performance Dashboard

The Insight workstation helps manage and control a facility with a comprehensive suite of graphical controls, configuration and engineering tools, schedule and command controls, report and trend generators, and a network troubleshooting tool.

This easy-to-use, PC-based interface enables facility-wide efficiencies and cost effective information sharing while giving you a comprehensive integration platform for connectivity to third party products and systems.

The Enhanced Graphics Option (EGO) provides the capability for facility operators and engineers to import pre-programmed gauges and charts, or create user-defined ones, with an animated look and feel. This helps visualize optimal building operating parameters in real-time, or can be used to support the creation of a dynamic energy dashboard.

The Energy Performance Dashboard integrates point data in APOGEE with the Enhanced Graphics Controls (EGO) option to determine when and where you need to make adjustments for maximized day-to-day operations. The Dashboard package comes with a standard toolkit that includes programs, point database, and background templates.



The Enhanced Graphics Option and Energy Performance Dashboard support achievement of LEED® innovation credits for green building education.

# Smart devices for smarter buildings

Access all of your building systems and equipment — lighting, HVAC, elevators, security — more cost effectively and efficiently with APOGEE'S Web-based BACnet solution.



PXM10S Display on PXC Compact Controller



PXC Modular



PXC Compact 24 Unitary  
Equipment Controller

## PXM10S PXC Compact and PXC Modular Controller Mounted Operator Display

This local user interface to a single PXC controller and its sub network features a user-friendly navigation and menu structure. The large interface screen with clear text provides local alarm annunciation and the ability to command and override equipment, plus manage alarms locally at the field panel. "Plug and Play" allows for the device to be automatically recognized and fully functional once plugged into the host field panel. A hot swappable feature allows for the device to be moved from device to device for local display without having to power down the controller and interrupt facility operation.

## PXC Compact Series Controllers

The PXC Compact Controller Series features the most flexible point configuration of any compact controllers on the market, with universal points capable of supporting up to many different signal types. Optionally, the controllers may supervise BACnet MS/TP controllers such as the PTEC (Programmable Terminal Equipment Controllers), ATEC (Actuator Terminal Equipment Controllers) or the wide array of other available BACnet MS/TP products. The PXC Compact 36 also optionally offers a high speed Island Bus connection, providing the ability to expand using the TX-I/O product range.

## Hand-Off-Auto (HOA) Accessory for PXC Compact Field Panels

This accessory replaces existing PXC Compact covers with new covers that are equipped with HOA switches along with override and I/O status LEDs. New installations requiring HOA functionality

should be specified using PXC Compact for a lower cost solution, or upgrade an already installed PXC Compact controller to expand its capabilities.

## PXC Modular and PXC Compact Web Services

Use in conjunction with a PXC Modular or PXC Compact 36 based Web server for graphical representation of system information over the Internet and for anywhere, anytime Web-based system application interaction and configuration, including programmability.

PXC Compact and Modular Controllers, which feature integrated on-board universal I/O (Inputs/Outputs), based on state of the art TX I/O™ technology, assure the right mix of I/O. They are BTL certified as a B-BC (Building Controller) to leverage standard protocol networks for interoperability and provide assurance in meeting strict BACnet protocol implementation guidelines.



**BACnet Programmable TEC**



**Series 2200 TEC Room Unit**



**BACnet VAV ATEC**

The PXC Compact Controller Series features the most flexible point configuration of any compact controllers on the market, with universal points capable of supporting many different signal types. Optionally, the controllers may supervise BACnet MS/TP controllers such as the PTEC (Programmable Terminal Equipment Controllers), ATEC (Actuator Terminal Equipment Controllers) or the wide array of other available BACnet MS/TP products. The PXC Compact 36 also optionally offers a high speed Island Bus connection, providing the ability to expand using the TX-I/O product range.

#### **PXC Compact 24 Unitary Equipment Controller**

Cost effective, freely programmable unitary equipment controller on BACnet MS/TP network, for flexibility to fit the controller capability to the equipment control needs. BTL certified as a B-AAC

(Advanced Application Controller) to leverage standard protocol networks for interoperability and provide assurance in meeting strict BACnet protocol implementation guidelines.

#### **Point Pickup Module (PPM) Series**

This cost-effective solution includes a 6 point analog, 6 point digital and 12 point combination module. Each of the modules has Universal Input capabilities for greater flexibility in distributed control and environmental sensing applications. The PXC Modular and Compact Series provide the control logic, while the PPM provides the networkable I/O.

#### **Series 2200 TEC Room Units**

Wall-mounted sensors for use with all TEC (Terminal Equipment Controller) and ATEC (Actuator Terminal Equipment Controller) zone controllers or Field Panels (PXC).

#### **BACnet Programmable Terminal Equipment Controllers (TEC)**

These controllers provide high performance Direct Digital Control (DDC) that can operate stand-alone or can be networked to perform complex HVAC control, monitoring and energy management functions. Controllers are field configurable and programmable for superior application flexibility with easy to use programming tools.

#### **BACnet VAV Actuator Terminal Equipment Controller (ATEC)**

Designed to reside on any BACnet control system, this integrated controller and actuator delivers high performance direct digital control (DDC) of pressure-independent and variable-air-volume zone-level routines. It can operate stand-alone or can be networked to perform complex HVAC control, monitoring and energy management functions.





# Building operating system access from anywhere via the web

Let the APOGEE system with BACnet advance your building's performance with anywhere accessibility and programmability.

## Remote Communication with APOGEE Insight

- Centralize programming throughout architecture
- Access remote sites simultaneously
- Monitor and command every level of the system remotely via the Web and plug & play controllers
- Secure access via SSL
- Send critical alarms and system event notifications to pagers, phones, SMS or Web-based email

## Information Management with APOGEE Insight

- Integrate point data in APOGEE Insight with the Enhanced Graphics Controls (EGO) option to determine when and where you need to make adjustments for maximized day-to-day operations
- Create and automatically schedule reports to any Ethernet printer or file
- Achieve long-term, enterprise-wide data processing and archiving. Includes a wide range of applications designed to give the right people the right information at the right time
- Maintain accreditation, regulatory and energy conservation goals
- Manage the entire life cycle of an alarm issue through tracking and enforcing mandatory operator actions toward alarm resolution

## Unique System Scalability with APOGEE Insight and the Web server Solution

- Unlimited users with the Web server solution
- Insight base and advanced versions match user needs
- Wide array of system configurations optimally engineered for facilities small to large
- Sophisticated facility-wide control applications with an enterprise network
- Application specific controllers tailored to your specifications
- Accommodate future expansion with flexible I/O point options
- Custom control sequences for any unique facility need

## Efficient Facility Management

- Auto learn and connect with network
- No PC hardware to maintain when using Web server
- Monitor, command and program system controllers through the BACnet Web server
- Review automatic logs of commands, overrides and system changes made by system operators with the Insight System Activity application
- Locate and troubleshoot problems quickly using the Insight System Profile and Dynamic Plotter applications



- Quickly schedule and modify facility usage with the Insight Scheduler
- Use site-wide licensing solutions to cost effectively add multiple Insight workstations
- Assign each user unique system-wide access privileges based on name and password
- Incorporate UL Listed fire alarm monitoring, control, and integration with the Insight Life Safety Option
- Reliably control critical areas such as laboratories, clean rooms and operating suites within precise operating parameters
- Make modifications using complete suite of system design and commissioning tools
- Use Insight Redundancy solution for mission critical facilities



# Interoperability and adaptability at every level

BACnet protocol performs across multiple systems, providing the necessary foundation for future expansion.

## The BACnet Solution

APOGEE offers the functionality of a native BACnet Web-based system protocol. With BACnet incorporated into every level — from the BAS workstation or controller embedded Web Server down to the field level network architecture — facility operators are empowered with a system that brings together standard protocol interoperability with time-saving features and functions. Boost productivity and enhance efficiency with remote paging, reporting and archiving, and Web-based functionality.

BACnet is the Heating, Ventilation and Air Conditioning (HVAC) industry standard protocol, according to its founding organizations, American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE), International Standards Organization (ISO), and American National Standards Institute (ANSI). Its reputation and growing use make it the best choice for a standard protocol across a system, or to use as an interoperability tool to help knit together a cohesive, tightly integrated system despite disparate technologies or vendor systems.

BTL (BACnet Testing Laboratories) listed components provide assurance that controllers are certified as interoperable and compliant to the BACnet protocol. Full programmability and flexibility of applications provides a complete, adaptable, and scalable Web-based solution that focuses your investment on value added capabilities.



## The benefits of open APOGEE building automation with native BACnet:

- Simplified operation of complex building controls and multi-building sites
- System-wide control and operations management through a single interface
- Anywhere system access and web programmability
- Fast interpretation of control data for system optimization and cost savings
- Centralized programming throughout architecture for time and labor savings
- Easy system expansions
- Plug and play controllers
- Seamless interoperability of system level control applications
- Incorporation of industry standard BACnet protocol
- Backward/forward compatibility protects investments and eliminates system obsolescence
- User-friendly & customizable web based graphical interface
- Flexible, programmable, and field configurable controllers for terminal boxes



# Exceptional occupant comfort in even the most demanding environments

APOGEE's powerful energy management applications like VAVPlus, chiller plant optimization (CPOP) and demand control ventilation (DCV) reduce energy waste and lower greenhouse gas emissions while creating a better indoor environment.

## Wireless Products

Wireless components eliminate the need for interconnecting wiring, require no AC power, and utilize low-power designs. With APOGEE Wireless Devices you can:

- Modernize facilities; outdated or ineffective energy management systems can be replaced or updated quickly, easily and economically.
- Use significantly less wire and materials, both today and when reconfiguring space in the future.
- Speed up installation and minimize disruption to business operations and occupants.
- Quickly and easily move sensors in frequently redesigned spaces while using less wire and materials.



Full-featured wireless sensors provide sensing, display, setpoint, and override for optimum consistency.

## Energy-efficient Products

The design and construction of energy-smart buildings offers tangible benefits to building owners and occupants. Building owners can lower their energy costs by 50% or more while lessening maintenance and capital costs. Building occupants realize increased comfort, health and productivity. APOGEE building automation and HVAC field devices help you achieve your building performance goals:

- Assist with gaining LEED credits for energy efficient and green building initiatives
- Engineered and proven control applications with extensive libraries limit rework and uncertainty
- Programmability at field level controller for quick and simple control application changes to meet the needs for advanced control capabilities
- Adaptive control algorithms for smarter control solutions which adapt to changing conditions quickly and automatically

- Wireless controllers use less materials and resources, improve and protect indoor environmental quality and deliver the highest levels of energy efficiency
- Complete line of dependable and compatible HVAC field devices: valves and damper actuators, sensors, controllers, thermostats, switches and relays, and variable frequency drives

## Sustainability Initiatives

Wherever possible, products in our manufacturing process are designed to contribute to sustainability strategies.

- Use of less materials in products
- Use of maximum allowable recycled materials
- Elimination of lead/tin-plating in all metals
- Reduction or elimination of paper labels when possible



# Get the most out of your building today... and tomorrow

Optimize building performance with integrated solutions tailored to your specific needs.

## Complete Building Management Solutions

Siemens is the world's leading provider of safe, secure and energy efficient solutions for buildings and building infrastructure. Our services ensure optimal building performance at the lowest total cost of ownership.

We offer you years of experience with BACnet integration, and active participation in the BACnet standard initiatives, including SSPC-135, BACnet International and BTL. We have been integrating systems using both standard and proprietary protocols since 1991.

From schools and office buildings to complex, mission-critical environments like data centers, and labs, Siemens expertise extends to a broad range of markets and facilities of all sizes. By developing an intimate understanding of a customer's organization, we design solutions that meet specific facility and business requirements.

## Systems Integration

With APOGEE as the backbone of your integration plan you have the flexibility to choose the best solutions for the future of your facility, subsystems and equipment. Our compatibility partners include the leading names in fire, life safety, security, electrical, lighting, mechanical and industrial systems. Your options include more than 700 systems/devices, representing 200 different vendors and more than 70 different proprietary and standard protocols — all certified to be compatible within an APOGEE-enabled structure and proven in more than 4,000 integration installations.

## Green Building Certification: Energy Efficiency and the Environment

Certification and labeling programs provide a scale that allows your organization to set and measure your energy savings and environmental goals. Whether it is the United States Green Building Council's Leadership in Energy and Environmental Design (LEED®) program or the Environmental Protection Agency's ENERGY STAR® label, our Energy and Environmental Solutions team delivers energy efficient, high performance green buildings with established green practices. Siemens will help you navigate your organization through the LEED programs and certification processes.

**Build upon past investments, meet today's needs, and prepare your building for the next emerging technologies. Contact your field office today to discuss building automation solutions that save energy, time and money.**

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