KMC CONTROLS
In touch.

Native BACnet
Building Automation Solutions

Thinking About KMC and BACnet

Sustainable, Interoperable, Reliable

These words prescribe the future of building automation controls in the 21st Century. These words describe what is provided by KMC BACnet® solutions...today.

Sustainable, "green" buildings will become the expected norm in the future. The U.S. Green Building Council has been paving the way with its Leadership in Energy and Environmental Design (LEED®) Green Building Rating System. Earning LEED certification points in the crucial categories of Indoor Environmental Quality and Energy and Atmosphere requires an efficient BAS (Building Automation System), which is what BACnet and KMC Controls® are all about.

Why BACnet...from KMC Controls?

BACnet (Building Automation and Control Networks) is the only communications protocol that was designed for open system interoperability and specifically intended for building systems. Interoperability means that products from different manufacturers can communicate with each other, work together, and more easily add new upgrades to older systems. The concept of interoperability blends well with the long-term perspective and integrated project design of LEED and other green approaches.

When opting for a BACnet system, why choose BACnet products by KMC Controls (a long-time member of BACnet International)? Carefully consider these KMC BACnet pointers before starting your building project.

Flexible Configuration and Deployment

For AHU, FCU, HPU, RTU, and VAV applications, we offer models of controllers with built-in standard application sequences and optimized outputs, which allow rapid deployment of controllers on a job. However, many sites require customization to their unique needs. For maximum flexibility, KMC BACnet controllers are Fully Field Programmable so you can customize your applications as much as you need.

Pondering Proprietary Properties and Objects

While the BACnet standard defines required objects and properties, it also provides manufacturers the freedom to create proprietary objects or properties of objects. Such moves, however, can block true interoperability. KMC Controls is committed to BACnet the way it was meant to be, and we refrain from using proprietary objects or proprietary properties in the standard objects of our "native" BACnet controllers.

Talking the Talk

Participation in annual BACnet interoperability workshops enables manufacturers to test the communication capability of their products with other BACnet equipment and to resolve problems that might arise in the field. KMC Controls has been an active participant in such workshops since their inception. Our products have communicated effectively with comparable products from all major BACnet manufacturers.

In the past, getting new controllers to communicate with other controllers on a network has often been one of the most time-consuming aspects of a network installation. KMC's built-in auto addressing automatically assigns MAC addresses and device instance numbers to our advanced application controllers, simplifying installation of a BACnet network.

BTL Listed (the BACnet Seal of Approval)

A "listing" from the BACnet Testing Laboratory (BTL) is the assurance that BACnet devices not only meet the standard, but also the more rigorous test requirements of the BTL. BTL testing demands a greater level of engineering commitment from manufacturers, and KMC Controls is committed to BTL listing for our native BACnet devices.

Robust Reliability...Sometimes Repackaged

After installation, the superior quality design and construction of KMC controllers will provide years of trouble-free operation even in demanding conditions. Our industry-leading five-year warranty shows our confidence in our products. Our products have been recognized even by other manufacturers as being among the best in the business. We privately label our controllers for a variety of corporations...but it is what's inside that counts whatever the outward label says.

So whether building new or augmenting an existing BACnet installation, KMC Controls is the intelligent choice. **The following pages describe KMC software tools, show sample installations of varying sizes, and further describe our hardware products.**

For more information, see the catalogs, product data sheets, and other award-winning resources available on **www.kmccontrols.com**.

Thinking Outside the Box (Software Solutions)

Energy costs, environmental and security concerns, and employee health/comfort/productivity have made the need to **control** building automation systems more important than ever before. The capability to link multiple building systems, manage building environments remotely, and manage multi-manufacturer interoperability issues can now be brought under control over the Internet.

TotalControl™

TotalControl from KMC Controls simplifies web-based monitoring and managing of everything from single rooms to multiple buildings. TotalControl and the Internet are all you need to access and manage critical functions of complex building automation systems.

TotalControl's Design Studio module is used to custom-build the Building Services web interface. Design of the interface is usually done by the controls contractor in consultation with the facility's owner/operator. Once designed, only the Building Services module is needed to monitor and control the building automation system... from anywhere.

Behind the scenes, the Building Services module collects and stores data from multiple BAS protocols and serves web pages. Then, only a web browser is required for the operator to interact with the trends, schedules, alarms, and pages managed from the Building Services computer. The web interface allows operators to control a BAS via a company network or the Internet. Operators can immediately see and change environmental controls or related building automation systems using just a web browser from an office desktop...or from a laptop at the beach.

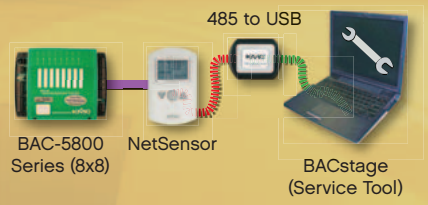
Other Control Tools

The KMC Controls **BACnet Module for Niagara^{AX}** adds the required functionality to the Niagara^{AX} framework to fully integrate KMC BACnet controllers into a Niagara-managed controls system. Once installed, all objects and properties in KMC BACnet controllers can be configured from either Niagara Workbench or through a JACE panel.

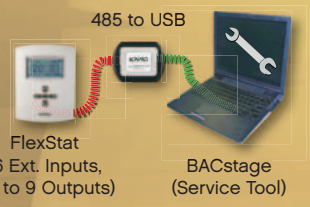
For less complex jobs, the **BACstage**™ service tool helps configure controllers and build graphical interfaces for its own operator workstation. In addition to permanent network connections, BACstage can also be used on a laptop to make quick, easy, temporary network connections through the data ports in most KMC controllers, NetSensors, FlexStats, AppStats, and some models of STE-6000 series sensors. KMC also supplies other software utilities to help facilitate the system configuration and programming process.

Stand-Alone

- AHU, HPU, Packaged Unit, or Split System
- Lighting
- Output Override Options



- AHU, FCU, HPU, RTU
- Temp. Sensor and 3 Analog Inputs
- Humidity and Motion Sensor Options



Features in KMC Controllers

- Peer-to-Peer Communication
- Passwords
- PID Loops
- Programming
- Weekly Schedules
- Annual Routines
- Alarms
- Trend Logs
- Runtime Logs
- System Groups

(Some features can only be viewable or usable through a service tool)

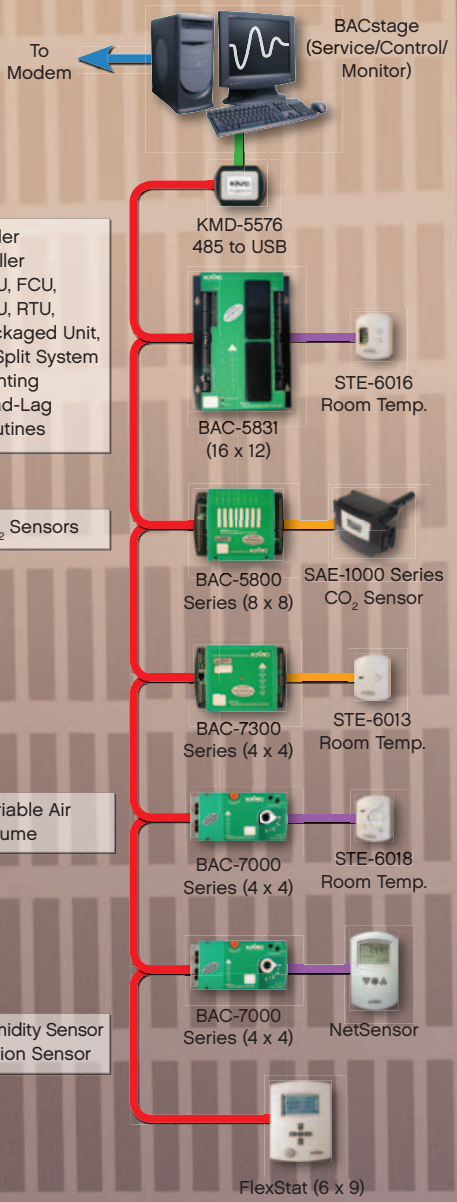
Connection Designators

(Dashed lines = temporary connections)

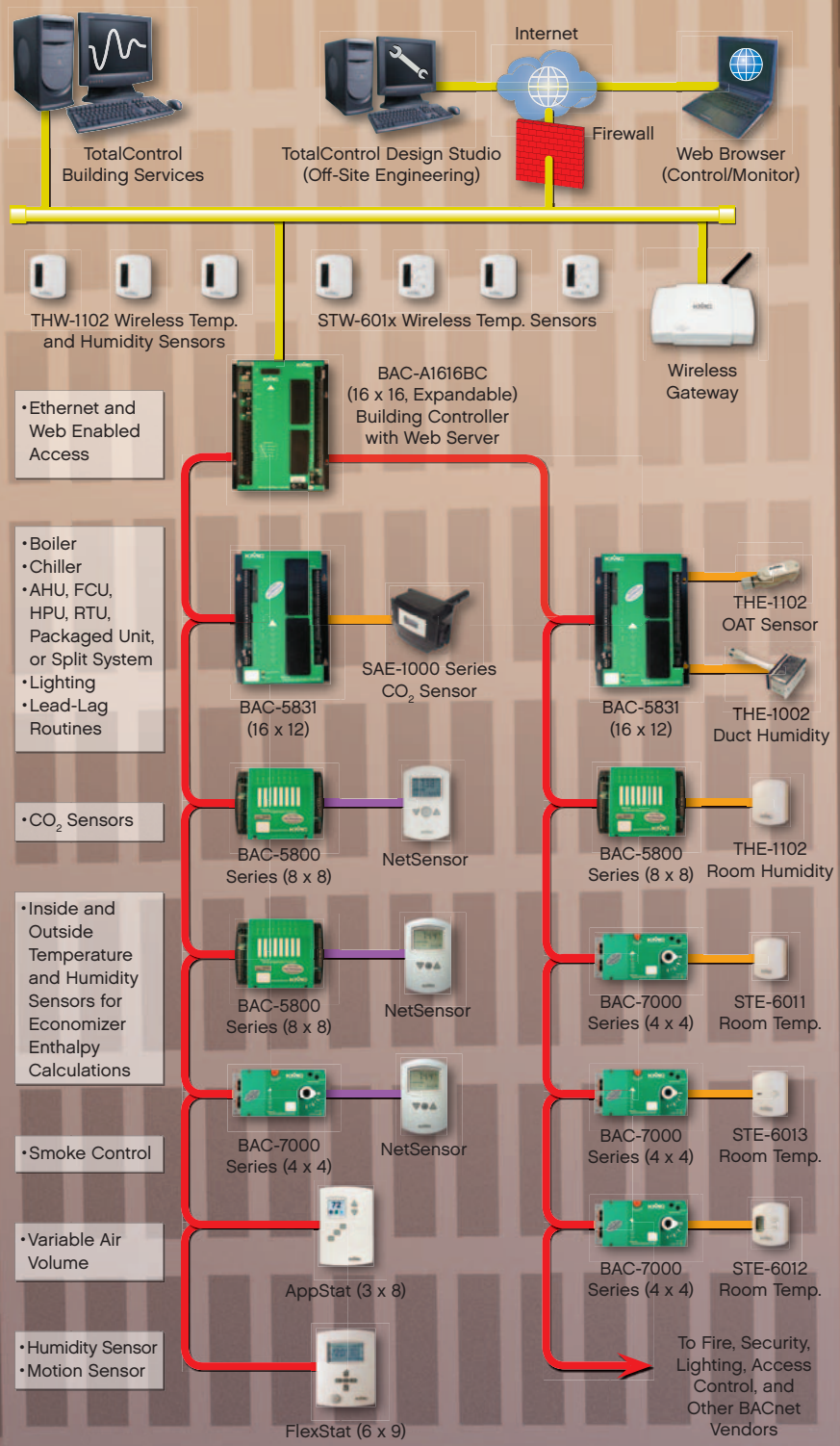
- EIA-485 (formerly RS-485) MS/TP
- Ethernet IP
- General Wiring to Terminals
- KMC Modular Cables/Connectors
- Modem/EIA-232 (formerly RS-232)
- USB

(Output devices not shown include actuators, valves, relays, triacs, and variable frequency drives. Configurations shown are only a few of many possible options.)

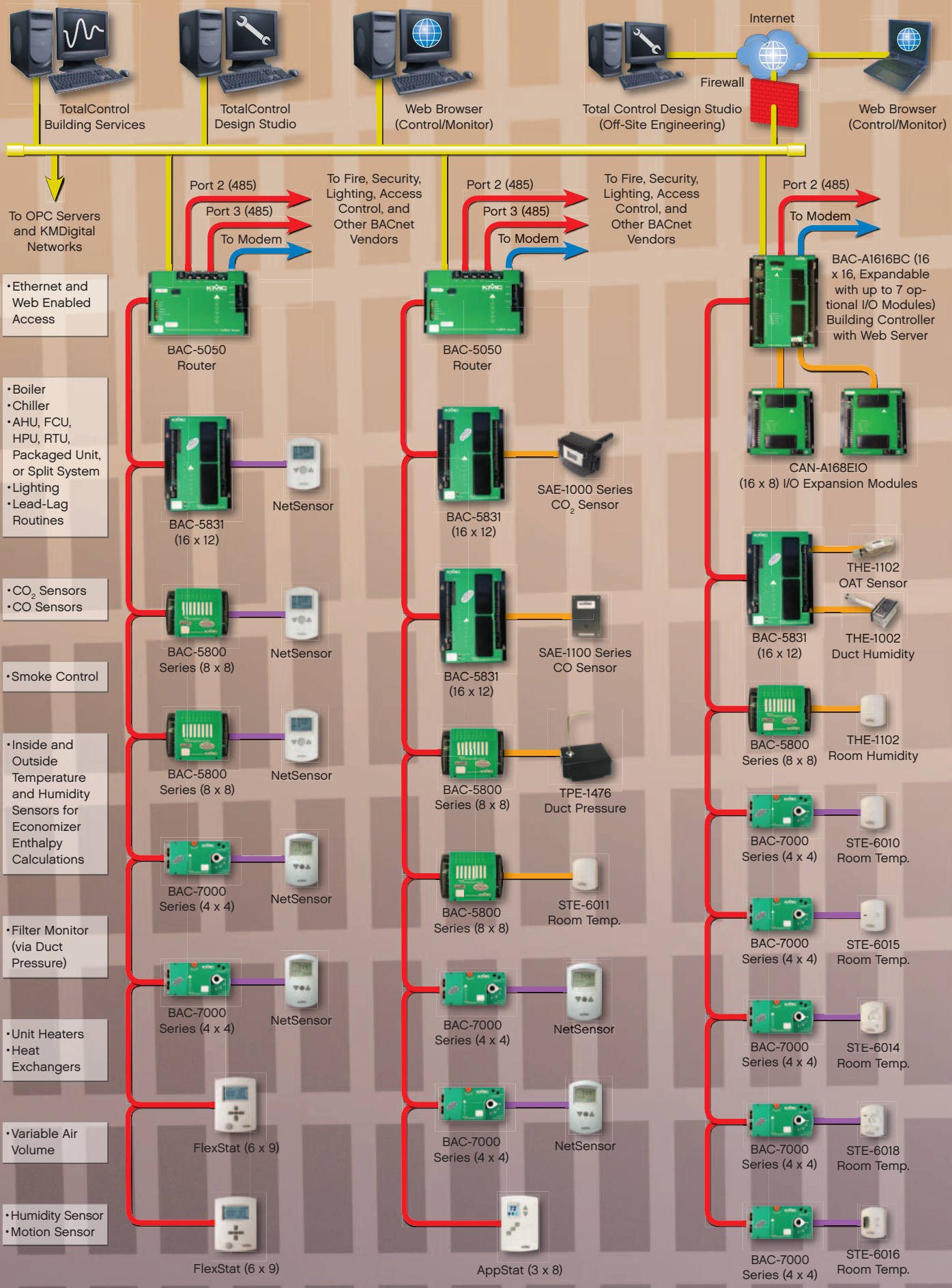
Small Building



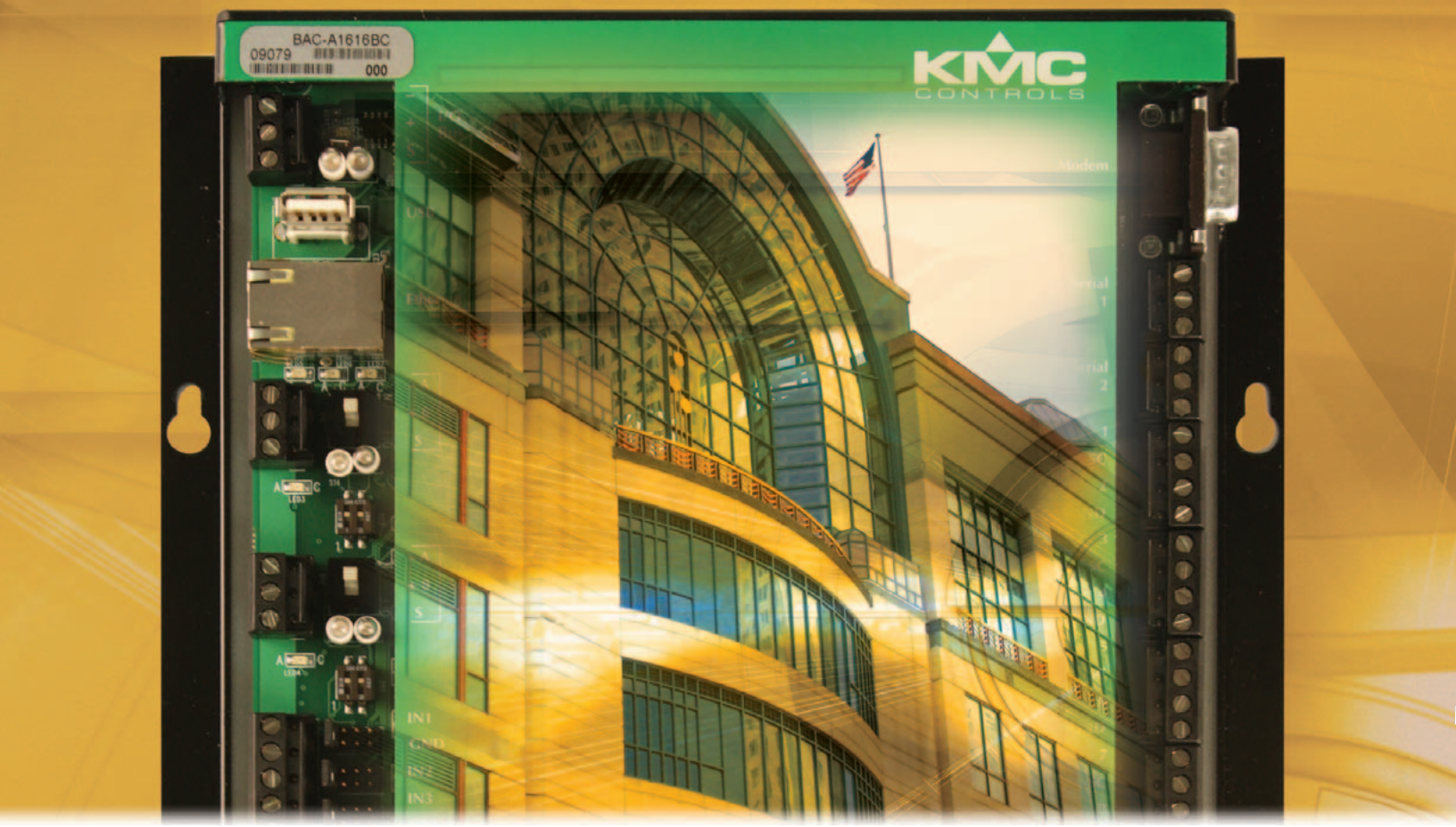
Medium Building



Large or Multiple Buildings



Thinking Inside the Box (Hardware Solutions)



Even though you can't conveniently package a building, you can have its automation controls in a box. Software sends commands and shows the results, but hardware does the grunt work.

With native BACnet functionality and field programmability, our BACnet hardware provides interoperability and flexibility in implementation.

Advanced Application Controllers

These models are representative of our line of native BACnet Advanced Application Controllers (B-AAC). While some offer built-in programming for specific purposes, all are fully field programmable.

General-Purpose Models

These direct digital controllers are BACnet MS/TP compliant and offer universal inputs and outputs (each of which is programmable as an analog or binary object).

BAC-5801/5802 (8 x 8) controllers are very popular for general-purpose HVAC and building automation applications. For added flexibility, you can add up to eight output override boards featuring triac, relay, and 4–20 mA options.

For more complex installations, multiple controllers can be networked together. Also, the larger **BAC-5831** (16 x 12) controllers provide additional inputs and outputs.

Specialized Models

Whether designed for AHU, FCU, HPU, RTU, or VAV applications, these controllers feature built-in sequences and are also fully programmable.

BAC-7000 series (4 x 4) controllers have built-in airflow sensors and actuators for VAV applications. Each also has a NetSensor connection and supplied programs, which make them ideal for stand-alone or networked VAV applications.

BAC-7300/7400 series (4 x 4) AHU, FCU, HPU, or RTU controllers have universal inputs and a combination of relays, triacs, and universal outputs, depending on the intended application. They also have built-in programming sequences for their intended uses.

Sensors, Interfaces, and Thermostats

Controllers are blind without sensors, and KMC Controls offers a variety of sensors to meet almost any need.

NetSensors®

KMD-116x/118x/12x1 series NetSensors are wall-mounted, temperature-sensing, programmable operator interfaces for use in KMC BACnet as well as our proprietary KMDigital® systems.

Optional built-in humidity and motion sensors are also available so that you can now have room temperature and humidity control linked to occupancy. After all, there's no reason to heat or cool a room when nobody's home. Programmed schedules are fine for most days...except for vacations, sick days, business trips, long meetings, and other disruptions to the routine. Room occupancy is optionally detected via a built-in passive infrared motion sensor with a range of up to 33 feet (10 meters).

NetSensors, available in white or light almond, offer a large, easy-to-read, backlit LCD display for easy temperature viewing, plus smaller characters for time and relative humidity. Convenient setpoint buttons are instantly accessible, and additional buttons behind the hinged cover can be programmed to control or display the value of an object (such as outside air temperature) in the attached controller.

FlexStat™ and AppStat™ Controller/Sensors

Sharing many similarities with NetSensors, **FlexStats** and **AppStats** combine the power of a controller (having up to nine relay and/or analog outputs) with an LCD display, a built-in temperature sensor, optional humidity, motion, and CO_2 sensors, as well as up to six input terminals for additional sensors. Plus, they have an easily configurable built-in library of AHU, FCU, HPU, and/or RTU applications that cover a great range of situations...or you can field-program FlexStats with custom code for the ultimate in flexibility.

Analog Sensors

KMC Controls also offers many analog sensors that can be connected to a controller's inputs for monitoring/controlling humidity, CO, CO_2, room/duct/outside temperature, duct pressure, air flow, fan status, and smoke as well as providing setpoint adjustment and initiating override.

Router

For additional networking options, the multi-port **BAC-5050 FullBAC™ Router** provides communication between BACnet IP LANs, BACnet MS/TP controller networks, foreign devices, and an Ethernet 802.3 network. It also provides a debug and modem connection among other features. The product's name derives from the robust connectivity it offers to the most demanding BACnet jobs.

Building Controller

For the most demanding applications, the **BAC-A1616BC BACnet Building Controller** (B-BC) is a high-performance, native BACnet direct digital controller. Integrated into the 16 x 16 controller is a BACnet router, a web server, and expandable I/O.

A web server allows a remote web browser to configure objects and monitor values (configuration/monitoring are also available through TotalControl). Firmware is easily upgradable (without requiring physical access) through the Ethernet connection.

Additionally, up to seven **CAN-A168EIO Expansion Modules** can be connected (via standard shielded twisted-pair wire up to 200 feet from the B-BC). Each provides another 16 universal inputs and 8 universal outputs (for a maximum total of 128 inputs and 72 outputs)...if you have to think outside this box.

Gateways

Ideally, interoperability means being able to talk to anything... even other protocols. If you need to link a BACnet system to a legacy KMDigital system, **KMD-5210 series KMDigital LAN Controllers with BACnet Interfaces** or the **KMD-5270-001 KMDigital WebLite Controller with BACnet Interface** can serve as interfaces. BACnet Ethernet 802.3 and MS/TP versions are also available.

For more information about individual products, see their respective data sheets and other documents on our award-winning web site (www.kmccontrols.com).

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In touch.

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