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# BACnet Catalog Supplement



# Important Navigation Tips!

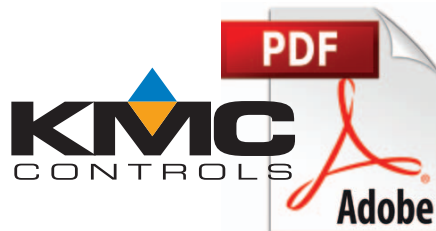
In this catalog, the following items have **blue hyperlinks** to their referred pages (click on a hyperlink to go to that page):

- **Contents** (lines)—the table of contents lists products alphabetically by application.
- **Index** (page numbers)—all cataloged KMC Controls model/part numbers as well as various topics are listed alphabetically.
- **Cross-references** (bold italicized blue text) to other pages in this document (See and See Also).
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# Contents

<b>Introduction.....</b>	<b>4</b>
About this Catalog .....	4
Products in this Catalog .....	4
About KMC Controls .....	5
Web Site and Publications.....	5
<b>Controller Selection Guide .....</b>	<b>6</b>
<b>Advanced Application Controllers .....</b>	<b>8</b>
BAC-12xxxx/13xxxx/14xxxx FlexStat Controllers/Sensors/Thermostats (10 x 9) .....	8
BAC-5801/5802 Advanced Application Controller (8 x 8).....	9
BAC-5831 Advanced Application Controller (16 x 12) .....	9
BAC-5841/5842 UFAD Advanced Application Controllers (8 x 8).....	10
BAC-5841-16 and BAC-5842-16 VAV Advanced Application Controllers (8 x 8).....	11
BAC-70xx Series Advanced Application Controllers (and Actuators), VAV (4 x 4) .....	12
BAC-730x/740x Series Advanced Application Controllers (4 x 4) .....	13
<b>Building Controller and Router .....</b>	<b>14</b>
BAC-A1616BC BACnet Building Controller (16 x 16).....	14
CAN-A168EIO I/O Expansion Module (16 x 8) for Building Controller .....	15
BAC-5050 FullBAC Multi-Port BACnet Router.....	15
<b>Lighting and Smoke Control.....</b>	<b>16</b>
Lighting Control Solutions.....	16
Smoke Control System (UUKL): Firefighters' Smoke Control Station (with BAC-58xx) .....	17
<b>Software.....</b>	<b>18</b>
TC Series TotalControl–Building Services Building Automation Software .....	18
TC Series TotalControl–Design Studio Advanced Operator Workstation Software.....	18
BAC-5000 BACstage Operator Workstation .....	19
<b>Additional Information .....</b>	<b>20</b>
Accessories .....	20
Sample BACnet Networks .....	21
<b>Index.....</b>	<b>22</b>



# Introduction

## About this Catalog

This SP-092 BACnet Catalog Supplement supplements the information in the much larger **SP-071 KMC Controls Catalog (with Electronic and Pneumatic Controls)**. See that catalog for information about KMC terms, conditions of sale, warranty, and returns. That catalog also contains various input and output devices for the digital controllers. Our analog electronic line includes actuators, relays, sensors, switches, thermostats, transducers, transformers, transmitters, valves, and accessories that are used with, not only our older analog electronic controllers, but also the latest digital controllers.

For even more details about KMC products, see the product data sheets on the KMC Controls web site.

For more information about:

- **Accessories and digital sensors (NetSensors)**, see the Digital Sensors and Accessories Catalog Supplement (SP-094).
- **FlexStats**, see the FlexStat Catalog Supplement and Selection Guide (SP-091).
- **KMDigital products**, see the KMDigital Catalog Supplement (SP-093).

These files are available as Acrobat PDF downloads from the KMC web site.

In these PDF catalogs, the following items have **blue hyperlinks** to their referred pages (click on a hyperlink to go to that page):

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## Products in this Catalog

We manufacture exclusively within the United States of America. This includes our pneumatic, analog electronic, and DDC (direct digital control) products and related software with the exception of those listed on our web site. The vast majority of our manufacturing takes place at our corporate headquarters in Indiana. Some pneumatic products are assembled in Virginia from components produced in Indiana. (See more on <http://www.kmccontrols.com/products/ARRAFunding.aspx>.)



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Our manufacturing includes circuit board assembly, injection molding of components and cases, and electronic assembly, mechanical assembly, and final product assembly. A 5-minute video, available on the KMC web site (<http://www.kmccontrols.com/default.aspx?id=american>), provides some visual insight into some aspects of our production processes.

As a convenience to customers, KMC Controls supplies some products on a “pass-through” arrangement from other manufacturers. We cannot claim Buy American conformance or non-conformance for such catalog products.

Although every effort is made to make the information in this catalog accurate, not all models listed may be available. KMC reserves the right to discontinue models at any time or change specifications or designs without notice and without incurring obligation. KMC further reserves the right to substitute a similar device for a device not in stock or no longer sold by the company.



## About KMC Controls

KMC Controls (formerly Kreuter Manufacturing Company) has been designing and manufacturing building automation solutions, HVAC control products, and energy management solutions since 1969. KMC remains the only privately held US controls manufacturer with a full line of digital, electronic, and pneumatic products.

KMC is dedicated to developing and maintaining controlled processes to competitively service our world-wide customer base, with building control products that meet government regulations, international standards, and customers requirements. KMC has an ISO 9001:2008 registered quality system in place. We meet the highest quality standards and can still quickly make changes dictated by the needs of the market. Our quality and quick response have led to reliable production of a complete line of pneumatic, analog electronic, and digital controls.

KMC maintains regional sales offices throughout the U.S. and distributes its solutions and products through value-added, authorized installing contractors, wholesalers, and OEMs throughout North America as well as authorized distributors worldwide.

KMC's intellectual property includes dozens of patents, but even the very best widgets would be worthless without proper support. Our customer service representatives excel at establishing personal relationships with their assigned customers. They know our product lines, have real-time inventory information at their fingertips, and can advise on product cross-reference information as well as all shipping options. The responsiveness of our team is unsurpassed, and they are available via toll-free telephone/fax and email.

For technical support, authorized installing contractors have unlimited free access to our knowledgeable team of technical support representatives from 8 AM to 8 PM (Eastern Standard Time) every business day. Our representatives are experienced in field operations, are fully trained in KMC product lines, have a wealth of product and system information available to them, and have ready access to design and software engineers as needed.

Multiple ways of communicating with the company are:

### Address (Mailing/Shipping)

KMC Controls  
19476 Industrial Drive  
New Paris, Indiana 46553, U.S.A.

### Toll-free Sales

Telephone 866.302.4KMC (4562)  
FAX 800.276.5555

### Internet

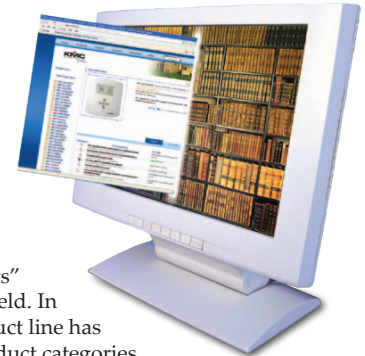
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[youtube.com/kmccontrols](https://youtube.com/kmccontrols)  
[info@kmccontrols.com](mailto:info@kmccontrols.com)



## Web Site and Publications

The purpose of the award-winning [www.kmccontrols.com](http://www.kmccontrols.com) is to support our valued customers and partners in KMC-related endeavors. The web site is divided into two parts, a public site and a partner site.

To get the most information and functionality, access the partner site using your user name and password. (Your log-in determines what information is available to you.) The "My Account" page lets you access a variety of personal services.



Most product information is available through the "Products" button or the Product Search field. In the Products section, our product line has been organized into major product categories and subcategories. Follow these branches to find specific products. You may also enter model numbers or key words into the search box for immediate access to the specific product you seek. While the public can view basic product information, product pricing and other associated information requires a registered user name and password.

The "Downloads" button offers access to numerous files that are organized into different categories. You can also download groups of files by checking the boxes next to them.

Besides product data, you can also find information about KMC as a company, contacts, training, sales tools, upcoming events, press releases, and other information.

We are constantly striving to improve the quality of the information we provide. This quest for quality is reflected in the web site and a number of our publications having **won many awards for publication excellence in recent years.**



SEE ALSO: The interactive [KMC Desktop](#) in the Products section of the [KMC partner web site](#) for quick and easy downloading of brochures, data sheets, installation guides, and other information.



# Controller Selection Guide

Models with RTC (Real Time Clock)	BAC-1xxxxx FlexStat	BAC-58x1	BAC-5831			BAC-7301C
Models without RTC		BAC-58x2		BAC-7001 BAC-7051	BAC-7003 BAC-7053	BAC-7301
Description	(10 x 9) Controller with Built-In Sensors	8 x 8	16 x 12	(4 x 4) VAV	(4 x 4) VAV Fan Induction	4 x 4 AHU
<b>BACnet Device Type</b>	B-AAC	B-AAC	B-AAC	B-AAC	B-AAC	B-AAC
<b>Inputs</b> (Analog, Binary, or Accumulator)	10 (6 ext., up to 4 sensors)*	8	16	4*	4*	4
<b>Max. # of Accumulator Objects</b>	0	3	3	3	3	3
<b>Outputs</b> (Analog or Binary)	9 (relays and analog)**	8	12	4*	4*	4*
<b>Binary Value Objects</b>	100	40	40	40	40	40
<b>Analog Value Objects</b>	100	40	40	40	40	40
<b>Multi-state Value Objects</b>	40	0	0	0	0	0
<b>PID Loop Objects</b>	10	8	10	4	4	4
<b>Schedule Objects</b>	2		8	8	8	8
<b>Calendar Objects</b>	1	3	3	3	3	3
<b>Event Enrollment Objects</b>	10	0	0	0	0	0
<b>Program Objects</b> (Control Basic)	10	10	10	10	10	10
<b>Program Size</b> (Each)	16K bytes	2.8K bytes	2.8K bytes	2.8K bytes	2.8K bytes	2.8K bytes
<b>Tables</b> (User Defined)	No	5 for devices/inputs, 3 for Control Basic				
<b>Trend Objects</b>	8	8	8	8	Yes	Yes
<b>Notification Class Objects</b>	5	8	8	8	8	8
<b>Create and Delete Objects</b>	No	No	No	No	No	No
<b>Segmentation</b>	Yes	No	No	No	No	No
<b>Passwords</b>	Yes (in menu)	N/A, part of software				
<b>Custom Units</b> (D or A)	Yes (via TotalControl)	No	No	No	No	No
<b>Connections/Ports</b>						
EIA-485 (Terminals)	Yes	Yes	Yes	Yes	Yes	Yes
NetSensor (Modular EIA-485)	No	Yes	Yes	Yes	Yes	Yes
Ethernet	Optional	No	No	No	No	No
EIA-232 (Terminals)	No	No	No	No	No	No
EIA-232 (9-pin D-sub )	No	No	No	No	No	No
Modem (Through EIA-232 Port)	No	No	No	No	No	No
<b>Bit Architecture</b>						
Processor	32	16	16	16	16	16
Input A/D	12	10	10	10	10	10
Output D/A	8	8	8	8	8	8
Pulse Counting	N/A	16 Hz	16 Hz	16 Hz	16 Hz	16 Hz
<b>Other Notes and Comments</b>	*6 external inputs and 1 integrated temperature sensor are standard; optional integrated sensors include humidity, motion, and CO2 **BAC-1xxx63 = 6 NO relays and 3 analog outputs, BAC-1xxx36 = 3 NO relays and 6 analog outputs	BAC-584x models have modular input and output connectors		*VAV, 1 input = air flow sensor, 1 output = actuator; 7001/7051 has 3 universal outputs; 7003/7053 has 1 universal, 1 triac, and 1 relay output; actuator stroke per minute: 7001/7003 = 18° 7051/7053 = 60°	*AHU, outputs = 3 universal, 1 triac	

**NOTE:** Upon power restoration after up to 72 hours of power outage, the Real Time Clock in applicable models automatically resets the system time. (See individual data sheets for additional product details.)





## BACnet Digital Controllers



BAC-7302C	BAC-7303C	BAC-7401C	BAC-A1616BC		BAC-5050*
BAC-7302	BAC-7303	BAC-7401		CAN-A1618EIO	
4 x 4 RTU	4 x 4 FCU	4 x 4 HPU	16 x 16 Building Controller	16 x 8 I/O Expansion Module	Router
B-AAC	B-AAC	B-AAC	B-BC	N/A	N/A
4	4	4	16*	16	N/A
3	3	3	16*	16	N/A
4*	4*	4*	16*	8	N/A
40	40	40	100 default, up to 1,000	N/A	N/A
40	40	40	100 default, up to 1,000	N/A	N/A
0	0	0	10, up to 256	N/A	N/A
4	4	4	16 default, up to 32	N/A	N/A
8	8	8	10, up to 100	N/A	N/A
3	3	3	10, up to 32	N/A	N/A
0	0	0	10, up to 512	N/A	N/A
10	10	10	32	N/A	N/A
2.8K bytes	2.8K bytes	2.8K bytes	25K bytes	N/A	N/A
			16 for inputs, 8 for Control Basic	N/A	N/A
8	8	8	64, up to 256	N/A	N/A
8	8	8	10, up to 128	N/A	N/A
No	No	No	Yes	Yes	N/A
No	No	No	Yes	N/A	N/A
			Yes (on Web graphics)	N/A	N/A
No	No	No	Yes	Yes	N/A
Yes	Yes	Yes	2 ports	No	4 ports
Yes	Yes	Yes	No	No	No
No	No	No	Yes	No	Yes
No	No	No	2	No	2
No	No	No	1	No	1 (shared)
No	No	No	Yes	No	Yes
16	16	16	32	32	32
10	10	10	16	16	N/A
8	8	8	12	12	N/A
16 Hz	16 Hz	16 Hz	16 Hz	16 Hz	N/A
*RTU, outputs = 1 universal, 1 triac, 2 staged triacs	*FCU, outputs = 2 universal, 1 triac, 1 staged triac	*HPU, outputs = 4 triacs	*Up to 7 expansion modules (via serial connection) for a total of 128 inputs and 72 outputs; also functions as a router and web server; supports BBMD and much more	Accessed through the BAC-A1616BC	*The router's RTC is not involved with system time and is only for troubleshooting; the router routes BACnet traffic, but it is not a BACnet device





# Advanced Application Controllers

**BAC-12xxxx/13xxxx/14xxxx****FlexStat Controllers/Sensors/Thermostats (10 x 9)**

The award-winning FlexStat is a controller and sensor in a single, attractive package that creates a flexible solution to stand-alone control challenges or BACnet network challenges. Temperature sensing is standard with optional humidity, motion, and CO<sub>2</sub> sensing. Flexible input and output configurations and built-in or custom programming ensure that a variety of application needs can be met. Such applications include single- and multi-stage packaged, unitary, and split systems (including high SEER/EER variable speed packaged equipment), as well as factory-packaged and field-applied economizers, water-source and air-to-air heat pumps, fan coil units, central station air handling units, and other similar applications.

In addition, an on-board library of programs permits a single model to be rapidly configured for a wide range of HVAC control applications. Thus, a single “one size fits all” FlexStat model can replace multiple competitor models. A single BAC-120163CW, for example, can be quickly configured for any of these application options:

- Air handling unit, with proportional heating and cooling valves, and with optional economizer, dehumidification, and/or fan status
- Fan coil unit, 2-pipe or 4-pipe, proportional or 2-position valves, with optional dehumidification (w/ 4-pipe option) and/or fan status
- Heat pump unit, with up to two compressor stages, and with optional auxiliary heat, emergency heat, dehumidification, and/or fan status
- Roof top unit, with up to two H/C stages, and with optional economizer, dehumidification, and/or fan status

FlexStats also provide the capability to customize the standard library of sequences using a KMC programming tool, enabling the adaption of the standard library to the unique site needs and application-specific requirements of a particular project.

BACnet over MS/TP communication is standard. “E” versions, with an RJ-45 jack, add BACnet over Ethernet, BACnet over IP, and BACnet over IP as Foreign Device (for communication across the Internet).

SEE ALSO: [FlexStat series web pages](#) for details as well as the [Controller Selection Guide on page 6](#).

## Main Features

### Interface and Function

- User-friendly English-language menus (no obscure numeric codes) on a 64 x 128 pixel, dot-matrix LCD display with 5 buttons for data selection and entry
- Multiple display options include selectable space temperature display precision, degrees F/C toggle, rotation values, display blanking, hospitality mode, and locked mode
- Built-in, factory-tested libraries of configurable application control sequences
- Integral energy management control with optimum start, deadband heating and cooling setpoints, and other advanced features to assure comfort while maximizing energy savings
- Schedules can easily be set uniquely by the entire week (Mon.–Sun.), weekdays (Mon.–Fri.), weekend (Sat.–Sun.), individual days, and/or holidays; six On/Off and independent heating and cooling setpoint periods are available per day
- Three levels of password-protected access (user/operator/administrator) prevent disruption of operation and configuration—plus Hospitality mode and Locked User Interface mode offer additional tamper resistance
- Integral temperature and optional humidity, motion, and/or CO<sub>2</sub> sensors
- All models have 72-hour power (capacitor) backup and a real time clock for network time synchronization or stand-alone operation

### Inputs (External)

- Six analog inputs for additional configurable remote external sensors, such as remote space temperature (with averaging, highest, and lowest options), remote CO<sub>2</sub>, OAT, MAT, DAT, water supply temperature, fan status, and other sensors
- Inputs accept industry-standard 10K ohm (Type II or III) thermistor sensors, dry contacts, or 0–12 VDC active sensors

### Outputs

- Nine outputs, a mix of analog and binary (relays)
- Each short-circuit protected analog output capable of driving up to 20 mA (at 0–12 VDC)
- The NO, SPST (Form “A”) relays carry 1 A max. per relay or 1.5 A per bank of 3 relays (relays 1–3 and 4–6) @ 24 VAC/VDC

### Regulatory

- UL 916 Energy Management Equipment
- FCC Class B, Part 15, Subpart B and complies with Canadian ICES-003 Class B (for BAC-13xxxx/14xxxx, FCC Class A, Part 15, Subpart B and complies with Canadian ICES-003 Class A)
- SASO PCP Registration KSA R-103260
- BACnet Testing Laboratory (BTL) listed

## Models and Accessories

See the data sheet for the complete listing. For aid in selecting the best model for an application (as well as accessories), see the [FlexStat Catalog Supplement and Selection Guide \(SP-091\)](#).





### BAC-5801/5802

#### Advanced Application Controller (8 x 8)



The BAC-5801/5802 native BACnet, fully programmable, direct digital controllers are versatile general purpose controllers in stand-alone environments or networked to other BACnet devices. As part of a complete building automation system, they provide precise monitoring and control of connected points, such as room temperature, humidity, fans, lighting, and other building automation functions. They install and configure easily, are intuitive to program, and contain modular jacks for quick connections to KMD-1x6x/1x8x/12x1 NetSensors. The BAC-5801 includes a real-time clock with power backup for 72 hours.

#### Models

BAC-5801	BACnet controller with real-time clock
BAC-5802	BACnet controller without real-time clock

#### Accessories

HPO-6700 series	Output override boards
HPO-0054	Replacement fuse bulb
HPO-0063	Replacement two-pin jumper
HCO-1102	Steel control enclosure, 10.1 W x 2.4 H x 7.1" D (257 x 62 x 181 mm)
KMD-116x	NetSensor
KMD-118x	NetSensor with humidity sensor
KMD-12x1	NetSensor with motion sensor
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub

#### Main Features

##### Inputs

- 8 universal inputs, each of which is programmable as an analog, binary, or accumulator object
- Pull-up resistors (switch selectable for none or 10K ohms) for switch contacts and other unpowered equipment
- 10-bit analog-to-digital conversion
- Pulse counting to 16 Hz
- 0–5 volts DC analog input range
- Overvoltage input protection

##### Outputs

- 8 universal outputs, each of which is programmable as an analog or binary object
- Slots for HPO-6700 series output override boards
- 0–10 volts DC for analog objects
- 0 or 12 volts DC for binary objects
- Outputs protected against intermittent shorts; output current limited to 100 mA per output (or 350 mA total)

##### Other Features

- Automatically assigns the MAC address and the device instance
- 10 Control Basic program areas, and programs and program parameters are stored in nonvolatile memory
- EIA-485 operating up to 76.8 kilobaud
- Compatible with KMD-1x6x/1x8x NetSensors through modular connectors

##### Regulatory

- BACnet Testing Laboratory (BTL) listed
- CE compliant
- FCC Class B, Part 15, Subpart B
- UL 916 Energy Management Equipment listed
- UL 864 Smoke Control Equipment listed (UUKL)
- SASO PCP Registration KSA R-103260

SEE ALSO: [Controller Selection Guide on page 6](#) and [BAC-5801/5802 series](#) web page for details.

NOTE: For NetSensors and accessories, see Digital Sensors and Accessories Catalog Supplement (SP-094).

### BAC-5831

#### Advanced Application Controller (16 x 12)



The BAC-5831 offers many of the features of the BAC-5801, but with **8 additional inputs** and **4 additional outputs** (with expanded total output current).

#### Main Features (Different From BAC-5801/5802)

##### Inputs

- 16 universal inputs

##### Outputs

- 12 universal outputs
- Short-protected outputs, output current limited to 100 mA per output (or 450 mA total)

#### Accessories (Different from BAC-5801/5802)

HPO-6802	Output override board raised cover (required when using any of the HPO-6700 series output override boards)
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SEE ALSO: [Controller Selection Guide on page 6](#) and [BAC-5831](#) web page for details.



## BAC-5841/5842

### UFAD Advanced Application Controllers (8 x 8)



SEE ALSO: [Controller Selection Guide on page 6](#) and [BAC-5841/5842 series](#) web page for details.

Based on the BAC-5801/5802 controllers, these native BACnet, fully programmable, direct digital controllers are **factory pre-programmed and pre-configured for use in Under Floor Air Distribution (UFAD)** applications. They have **modular input and output jacks** to simplify field wiring, using standard Ethernet cables (with modular RJ-45 plugs) for input sensors and KMC HSO-2200 series cables with RJ-12 modular plugs on the outputs. Outputs are typically connected to KMC MEP-4042/4842 proportional actuators with integral RJ-12 modular jacks.

They can provide up to five individual zones of control using a KMD-1x6x/1x8x/12x1 NetSensor and up to four STE-6014 or STE-6016 wall sensors. They are pre-configured to provide 5 cooling zones. Two outputs may also be changed from cooling to heating. Depending on cable lengths and power wiring used, up to 8 MEP-4042/4842 actuators may be driven in each chain, and each chain can be individually tied to any of five zone sensors. These models can also be used with UFAD diffuser actuators manufactured by KMC Controls for specific OEMs.

These controllers provide precise monitoring and control of connected points. Remote building automation systems may further command occupancy modes and control setpoints of the networked devices, process alarm conditions, and use information generated by the controllers to optimize the performance of “upstream” air handlers, fans, and other building automation functions.

#### Models

BAC-5841	UFAD controller with Real Time Clock (RTC)
BAC-5842	UFAD controller without RTC

#### Main Features (Different From BAC-5801/5802)

##### Pre-Programmed Features

- Default programmed to provide (up to) 5 independent cooling zones with cooling setpoint and control of connected proportional MEP-4x42 series actuators
- Independent heating outputs to provide 2 Heat/Cool zones (underfloor cooling with hot water reheat) can also be controlled from one common STE-6014 or STE-6016 space sensor for each zone

##### Inputs

- Four modular inputs pre-configured as zone temperature sensing inputs or setpoint inputs
- Four modular 8-pin RJ-45 female jacks for use with standard Ethernet cables to connect to STE-6014 or STE-6016 sensors
- Built-in sensor selection switch for STE-6014 or STE-6016 room sensors—when set to the “STE-6016” position, the controller sources necessary power for the LCD digital display on the STE-6016 sensors
- Integral switchable network End of Line (EOL) resistors, indicating fuses, and network isolation switch with LED indication of operation for BACnet MS/TP communications
- Overvoltage input protection
- Compatible with KMD-1x6x/1x8x NetSensors

##### Outputs

- 8 pre-configured outputs for control of proportional actuators or staged equipment
- 5 modular 6-pin RJ-12 female jacks for use with HSO-2200 series cables (or local equivalent)
- Removable screw terminal block, wire size 14–22 AWG for unitary equipment control

#### Accessories (Different from BAC-5801/5802)

HSO-2121	Transformer cable, 12 inches, with RJ-12 plug on one end (provides local power to actuator from transformer mounted at actuator location)
HSO-22xx	Modular cables, RJ-12 plug on both ends ( <b>see data sheet for the appropriate part number</b> )
HSO-2350	DDC controller analog output cable, 50 ft., with RJ-12 plug on one end (provides 2–10 VDC control signal to actuator from remote controller)
HSO-5010	“Y” connector with 3 RJ-12 jacks (allows powering of two strings of actuators when power is applied through an HSO-2121 and the HSO-5010 “splitter” is mounted in the center of each string)
MEP-4042	40 inch-lbs. min. torque, with modular jacks
MEP-4842	80 inch-lbs. min. torque, with modular jacks
REE-5501	Relay module, three-stage reheat
STE-1002	Thermistor (Type II) with 3-foot leads for discharge air temperature
STE-1004	Thermistor (Type II) with 5-foot leads for discharge air temperature
STE-1400 Series	Duct sensors (Type III thermistors) for discharge air temperature
STE-6014	Room temp. sensor w/ rotary setpoint dial
STE-6016	Room temp. sensor w/ LCD display and up/down setpoint buttons
TPE-1474-21	Low pressure transducer (–0.5 to +0.5", –1 to +1", 0 to 1", 0 to 2" wc)
XEE-6112-100	Transformer, 120-to-24 VAC, 96 VA, dual-hub
XEE-6311-100	Transformer, 120/240/277/480-to-24 VAC, 96 VA, dual-hub



### BAC-5841-16 and BAC-5842-16 VAV Advanced Application Controllers (8 x 8)



SEE ALSO: [Controller Selection Guide on page 6](#) and [BAC-5841-16/5842-16 series](#) web page for details.

Similar to the BAC-5841/5842 controllers, these controllers are factory **pre-programmed and pre-configured for use in commercial/residential pressure-dependent VAV zoning** applications. They provide up to four zones of individual damper actuator control when used with a KMD-1x6x/1x8x/12x1 NetSensor and three STE-6014 or STE-6016 room sensors. They also provide On/Off control of an associated AHU fan, two stages of heat, and two stages of cool with the use of external KMC REE-5501 staging relay modules.

#### Models

BAC-5841-16	VAV controller with Real Time Clock (RTC)
BAC-5842-16	VAV controller without RTC

#### Main Features (Different From BAC-5841/5842)

##### Pre-Programmed Features

- Default programmed to provide up to 4 zones of pressure-dependent VAV zone control using connected proportional MEP-4042/4842 actuators (space temperature sensing and setpoint control are provided via 3 STE-6014 or STE-6016 sensors and 1 KMD-1x6x/1x8x NetSensor)
- Air handler minimum air flow requirements to be provided by: (1) the installer setting the minimum travel stops on each zone control damper actuator to provide a minimum level of air flow, (2) a gravity bypass damper control provided by others, or (3) static pressure bypass damper control provided with an optional KMC TPE-1474-21 and MEP-4042 applied to the bypass damper
- Default programming to provide 1 intermittent or constant operation fan output, 2 stages of DX cooling, and 2 stages of heating with the use of REE-5501 external staging relay modules

##### Inputs

- Input #1 is default programmed to be used with a KMC Model STE-1002/1004 and STE-14xx series thermistor duct sensor to provide Discharge Air Temperature (DAT) low limit protection
- Automatic Heat/Cool changeover of the connected unitary equipment is provided based on combined demand of heating and cooling zones
- If a KMD-1261/1281 NetSensor with a motion sensor is used and no motion is detected in the zone for more than 15 minutes, then Zone 5 will be set to a "standby" mode with a temporary vacancy setpoint





## BAC-70xx Series

### Advanced Application Controllers (and Actuators), VAV (4 x 4)



SEE ALSO: [Controller Selection Guide on page 6](#) and [BAC-70xx series web page](#) for details.

The BAC-70xx series are native BACnet, direct digital controllers for Variable Air Volume applications. Of the 4 x 4 inputs and outputs, one input is dedicated to the on-board airflow sensor for use with a single or multi-point differential pressure measuring station or pitot tube, and one output is dedicated to the actuator (allowing three free inputs and three free outputs). A NetSensor easily connects via a modular jack. Install this versatile controller in stand-alone environments or networked to other BACnet devices. As part of a complete building automation system, these controllers provide precise monitoring and control of connected points.

The **BAC-7001/7051** (with three universal outputs) comes with preprogrammed sequences for three single-duct VAV terminal unit applications:

- Heating-cooling changeover
- VAV with time proportional (hot water) reheat
- VAV with three-stage (electric) reheat

The **BAC-7003/7053** (with one universal output, one triac, and one relay) comes with preprogrammed sequences for VAV fan induction unit applications:

- Heating and cooling
- Cooling with time-proportional (hot water) reheat
- Cooling with three-stage (electric) reheat

#### Models

BAC-7001	VAV controller with 18°/minute actuator
BAC-7051	VAV controller with 60°/minute actuator
BAC-7003	VAV fan induction unit controller with 18°/minute actuator
BAC-7053	VAV fan induction unit controller with 60°/minute actuator

#### Accessories

KMD-116x	NetSensor
KMD-118x	NetSensor with humidity sensor
KMD-12x1	NetSensor with motion sensor
SSS-100x	Air flow sensor
HFO-0011	Reducer bushing, 1/2" to 3/8" shaft adapter
HMO-4531	Replacement non-rotational bracket
HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub

#### Main Features

##### Inputs, Universal

- 3 universal inputs, each of which is programmable as an analog, binary, or accumulator object (fourth input is airflow sensor)
- Pull-up resistors (switch selectable for none or 10K ohms) for switch contacts and other unpowered equipment
- Removable screw terminal block, wire size 14–22 AWG
- 10-bit analog-to-digital conversion
- Pulse counting to 16 Hz
- 0–5 volts DC analog input range
- Overvoltage input protection

##### Input, Air Flow Sensor

- Platinum-ceramic flow-through, 0 to 3000 fpm (15.24 m/s) using 24-inch-long 1/4" FR tubing and SSS-1000 series flow pickups
- Range dependent upon differential pressure pickup, tubing size/length, and connections

##### Outputs, Universal

- Universal outputs (3 for BAC-7001/7051, 1 for BAC-7003/7053), each of which is programmable as an analog or binary object
- Standard and custom units of measure
- Removable screw terminal block, wire size 14–22 AWG
- 0–10 volts DC for analog objects
- 0/12 volts DC for binary objects
- Outputs protected against intermittent shorts; output current limited to 100 mA per output (or 300 mA total)

##### Output, Triac

- Optically isolated triac output (1 for BAC-7003/7053), programmable as a binary object
- Maximum switching 30 VAC at 1 A

##### Output, Relay

- Normally open relay contact (1 for BAC-7003/7053)
- Maximum switching 30 VAC/VDC at 2 A

##### Output, Actuator

- Torque of 50 in-lbs. (5.7 N•m) min. and 70 in-lbs. (7.9 N•m) max.
- Angular rotation of 0 to 95° with adjustable end stops at 45/60/90° rotation
- Timing:
  - BAC-7001/7003—18°/minute at 60 Hz, 15°/minute at 50 Hz
  - BAC-7051/7053—60°/minute at 60 Hz, 50°/minute at 50 Hz

#### Other Features

- Programs and program parameters are stored in nonvolatile memory
- EIA-485 operating up to 76.8 kilobaud
- NetSensor compatible with connection through modular jack

#### Installation

- Supply voltage: 24 volts AC (–15%, +20%), 25 VA, Class 2
- Dimensions: 8.2 x 4.2 x 2.3" (209 x 107 x 57 mm)
- Weight: 2.4 lbs (1.1 kg)

- Case material: Flame-retardant plastic

#### Regulatory

- BACnet Testing Laboratory (BTL) listed
- CE compliant
- FCC Class B, Part 15, Subpart B
- UL 916 Energy Management Equipment listed
- SASO PCP Registration KSA R-103260



## BACnet Digital Controllers

### BAC-730x/740x Series

#### Advanced Application Controllers (4 x 4)



SEE ALSO: [Controller Selection Guide on page 6](#) and [BAC-730x/740x series](#) web page for details.

These native BACnet, fully programmable, direct digital controllers designed for small air handling units (AHU), roof top units (RTU), fan coil unit (FCU), or heat pump units (HPU). They come supplied with installed programming sequences for their respective type of application. Use these versatile controllers in stand-alone environments or networked to other BACnet devices. As part of a complete building automation system, they provide precise monitoring and control of connected points. They install and configure easily, are intuitive to program, and contain modular jacks for quick connections to NetSensors. The BAC-7xxxC models include a real-time clock with power backup for 72 hours.

#### Models

*BAC-7301	AHU controller without real-time clock
*BAC-7301C	AHU controller with real-time clock
*BAC-7302	RTU controller without real-time clock
*BAC-7302C	RTU controller with real-time clock
BAC-7303	FCU controller without real-time clock
BAC-7303C	FCU controller with real-time clock
*BAC-7401	HPU controller without real-time clock
*BAC-7401C	HPU controller with real-time clock

#### Accessories

KMD-116x	NetSensor
KMD-118x	NetSensor with humidity sensor
KMD-12x1	NetSensor with motion sensor
HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
HCO-1102	Enclosure, 10.1 W x 2.4 H x 7.1" D
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub

#### Main Features

##### Inputs, Universal

- 4 universal inputs, each of which is programmable as an analog, binary, or accumulator object (accumulators limited to three in one controller)
- Pull-up resistors (switch selectable for none or 10K ohms) for switch contacts and other unpowered equipment
- Removable screw terminal block, wire size 14–22 AWG
- 10-bit analog-to-digital conversion
- Pulse counting to 16 Hz
- 0–5 volts DC analog input range
- Overvoltage input protection

##### Outputs, Universal

- Universal outputs (3 for BAC-7301/7301C, 2 for BAC-7303/7303C, 1 for BAC-7302/7302C), each of which is programmable as an analog or binary object
- Standard and custom units of measure
- Removable screw terminal block, wire size 14–22 AWG
- 0–10 volts DC for analog objects
- 0/12 volts DC for binary objects
- Outputs protected against intermittent shorts; output current limited to 100 mA per output (or 350 mA total)

##### Outputs, Triac

- Optically isolated triac output (1 for BAC-7301/7301C/7302/7302C/7303/7303C, 1 dual-staged for BAC-7303/7303C, 2 dual-staged for BAC-7302/7302C, 4 for BAC-7401/7401C) programmable as a binary object
- Maximum switching 30 VAC at 1 A

##### Other Features

- 10 Control Basic program areas
- Programs and program parameters are stored in nonvolatile memory
- Auto restart on power failure
- EIA-485 operating up to 76.8 kilobaud
- NetSensor compatible with connection through modular jack

##### Installation

- Supply voltage: 24 volts AC (–15%, +20%), 25 VA, Class 2
- Dimensions: 6.8 x 4.4 x 1.4" (172 x 111 x 36 mm)
- Weight: 3.5 ounces (99 g)
- Case material: Flame-retardant plastic

##### Regulatory

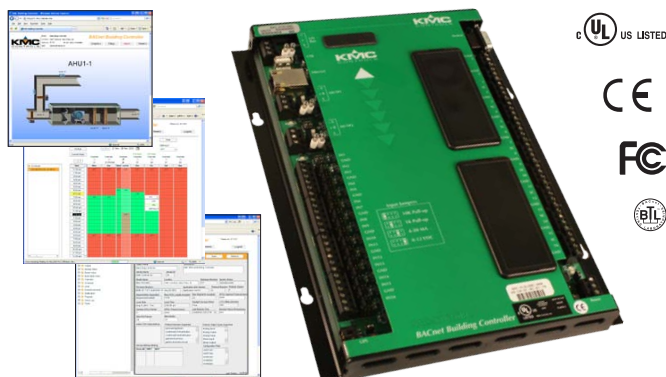
- BACnet Testing Laboratory (BTL) listed
- UL 916 Energy Management Equipment listed
- FCC Class B (Class A for BAC-7303/7303C), Part 15, Subpart B
- SASO PCP Registration KSA R-103260
- \*CE compliant (except for BAC-7303/7303C)



# Building Controller and Router

## BAC-A1616BC

### BACnet Building Controller (16 x 16)



SEE ALSO: [Controller Selection Guide on page 6](#) and [BAC-A1616BC series](#) web page for details.

The BACnet Building Controller (B-BC) is a high-performance, native BACnet direct digital controller. As part of a complete interoperable building automation system, this 16 x 16 B-BC provides precise monitoring and control of connected points. Integrated into the **controller** is a BACnet **router**, a **web server**, and **expandable I/O** in a native BACnet device:

- Built-in web configuration pages allow web browser to configure I/Os and objects, monitor values and alarms (configuration/monitoring also available through TotalControl), and set-up users and passwords. Custom graphic interface (created/published in TotalControl) for remote web browser.
- Routes traffic between two MS/TP ports, one BACnet PTP (point-to-point) port, four (logical) BACnet IP ports, and one (logical) BACnet Ethernet port (BACnet IP and BACnet Ethernet are logical ports on the Ethernet physical port). Supports BACnet IP foreign device registration and Broadcast Management Device (BBMD), supports PTP modem communications, and performs IP packet assembling/disassembling (PAD) routing for up to four BACnet IP PAD networks. Each of the four (logical) BACnet IP ports can be configured for BACnet IP, BBMD, foreign device registration, or PAD.
- Firmware easily upgradable (without requiring physical access) through the Internet or Ethernet connection.
- 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 providing an additional 16 universal inputs and 8 universal outputs (for a maximum total of 128 inputs and 72 outputs).

#### Models

BAC-A1616BC-000	BACnet Building Controller
BAC-A1616BC-001	B-BC with web graphics pages

#### Main Features

##### Inputs

- Inputs configurable via jumper for 1K or 10K ohm pull-up resistors (for unpowered contacts or devices), 0–12 VDC, or 4–20 mA
- Analog inputs accept industry-standard 1K ohm platinum and 10K ohm thermistor sensors or 4–20 mA devices
- Binary inputs accept 0 or 12 VDC (on/off)
- Pulse (passive or active up to 12 VDC) counting to 16 Hz
- Input overvoltage protection (24 volts AC, continuous)
- 16-bit analog-to-digital conversion on inputs

##### Outputs

- Outputs protected against intermittent shorts; output current limited to 100 mA per output 100 mA (at 0–12 VDC) or 600 mA for all outputs
- 16 slots for HPO-6700 series output override cards
- 12-bit digital-to-analog conversion on outputs

##### Other Key Features

- Email notifications of alarms and events, using external or (with license) internal SMTP “server”
- Up to 32 Control Basic custom program sequences for optimal control of a central plant, air handlers, and other connected equipment
- Real-time clock with power backup for 72 hours
- High-performance 32-bit processor
- Meets or exceeds the specifications in ANSI/ASHRAE BACnet Standard 135-2004 for BACnet Building Controllers

##### Installation

- Dimensions: 8.4 x 11.2 x 1.1" (w/o HPO output card covers or 1.9 w/ covers) inches (283 x 214 x 27/48 mm)
- Weight: 2.3 lb. (1.0 kg)
- Supply Voltage: 24 volts AC (–15%, +20%), 25 VA, Class 2
- Case Material: Powder-coated steel

##### Regulatory

- CE Compliant
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
- Complies with Canadian ICES-003
- BACnet Testing Laboratory (BTL) listed
- SASO PCP Registration KSA R-103260

#### Accessories

CAN-A168EIO	I/O Expansion Module (see the next page)
HPO-6700 series	Output override boards
HCO-1035	Steel control panel enclosure, 20 W x 24 H x 6" D
HCO-1036	Steel control panel enclosure, 24 W x 36 H x 6" D
HPO-0054	Replacement fuse bulb
HPO-0063	Replacement two-pin jumper
KMD-5567	EIA-485 surge suppressor
KMD-5569	56K Faxmodem
KMD-5672	EIA-232 to female DB-9 connector
XEE-6000 series	Transformers





## CAN-A168EIO

### I/O Expansion Module (16 x 8) for Building Controller



This module expands the inputs and outputs of the BAC-A1616BC:

- Onboard 16 universal inputs and 8 universal outputs, software selectable as analog or binary objects
- Each short-circuit protected output capable of driving up to 100 mA (at 0–12 VDC) or 450 mA for all outputs
- 8 slots for output override cards (e.g., triac, relays, 4–20 mA) for large relays or devices that cannot be powered from a standard universal output

- Can be installed up to 200 feet away from the BAC-A1616BC using standard shielded twisted-pair wiring on a serial bus connection
- One serial bus connection (terminal block) for daisy-chaining up to 7 expansion I/O modules
- Expansion I/O modules addressed with DIP switches

#### Main Features

<b>Dimensions</b>	8.4 x 8.2 x 1.1 (without HPO output card covers or 1.9 with covers) inches (214 x 207 x 27/48 mm)
<b>Weight</b>	1.6 lb. (0.7 kg)
<b>Supply Voltage</b>	24 volts AC (–15%, +20%), 19 VA, Class 2
<b>Case Material</b>	Powder-coated steel
<b>Regulatory</b>	<ul style="list-style-type: none"> <li>• CE Compliant</li> <li>• UL 916 Energy Management Equipment listed</li> <li>• FCC Class B, Part 15, Subpart B</li> <li>• Complies with Canadian ICES-003</li> <li>• SASO PCP Registration KSA R-103260</li> </ul>

## BAC-5050

### FullBAC Multi-Port BACnet Router



SEE ALSO: [BAC-5050](#) web page for details.

The BAC-5050 FullBAC™ is a multi-port BACnet router for routing building automation data between BACnet IP, BACnet Ethernet, and MS/TP networks. It supports BACnet IP pad routing and also includes direct serial or modem (KMD-5569 is recommended) point-to-point connection. It conforms to ANSI/ASHRAE Standard 135-2001.

The BAC-5050 supports four IP networks. Each network can be configured as any of the following:

- BACnet broadcast management device (BBMD)
- Normal BACnet IP network
- PAD (packet assembling/disassembling) routing
- Foreign device registration with BACnet broadcast management devices (BBMD)

#### Main Features

##### Communications

- 10BaseT Ethernet connection for BACnet/IP and 802.3 networks
- Four EIA-485 ports for connecting to MS/TP networks; each port supports rate up to 76.8 kilobaud
- Supports four IP networks, and each network can be configured as any of the following:
  - BACnet broadcast management device (BBMD)
  - Normal BACnet IP network
  - PAD (packet assembling/disassembling) routing
  - Foreign device registration with BACnet broadcast management devices (BBMD)
- Point-to-point protocol support on EIA-232 port
- Dial-up point-to-point connection with external modem (KMD-5569 recommended)
- Two EIA-232 connectors for point-to-point, diagnostics, and direct connection to computer serial ports

##### BACnet Router Tools

- BACnet Router Tools software supplied with BAC-5050
- Configure the router with a direct serial cable connection or over Ethernet
- Self-discovers and displays remote networks

##### Installation

- Power supply: 120/240 international-ready power supply, power-fail with auto restart capabilities
- Weight: 1.8 pounds (816 grams)

##### Regulatory

- CE compliant
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
- BACnet Testing Laboratory (BTL) listed
- SASO PCP Registration KSA R-103260

#### Options and Accessories

HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
HPO-6001	Replacement cable ferrite core
KMD-5563	Replacement 5/±15 VDC power supply with 5-pin DIN connector
KMD-5569	External 56K modem
KMD-5672	EIA-232 Serial to PC cable



# Lighting and Smoke Control

## Lighting Control Solutions



Lighting consumes between 15 and 40% of most buildings' energy costs. Moreover, heat generated by lighting adds to the cooling load and energy used by the building's HVAC system. With energy cost per watt continuing to climb, every watt of lighting saved adds up to big savings over the life of a building. Wasted watts can be reduced by a building automation system with occupancy schedules, motion sensors, and photocell sensors.

KMC programmable BAC-58xx and BAC-A1616BC controllers can use schedules plus third-party switches and motion sensors (for occupancy control) and photocells (for daylight harvesting) connected to the inputs. Third-party dimmers and latching relays can be connected to the controller's outputs.

KMD-1261/1281 NetSensors have built-in motion sensors that can be used to trigger room lighting (in addition to changing temperature setpoints) when connected to a properly configured BAC-58xx controller. BAC-1x1xxxC FlexStats also contain a built-in motion sensor that can (with custom programming) be used to trigger room lighting.

### Accessories

- |               |  |
|---------------|--|
| KMD-1261/1281 | NetSensors with motion sensor for use with KMD-58xx controllers (see the Digital Sensors and Accessories Catalog Supplement, SP-094) |
| REE-2xxx/31xx | Relays (see the KMC Catalog, Electronic and Pneumatic Controls, SP-071)  |

### Models

- |             |  |
|-------------|--|
| BAC-1x1xxxC | FlexStats with motion sensor (see <a href="#">page 8</a> )   |
| BAC-5801    | BACnet 8 x 8 Advanced Application Controller with real-time clock (see <a href="#">page 9</a> )    |
| BAC-5802    | BACnet 8 x 8 Advanced Application Controller without real-time clock                               |
| BAC-5831    | BACnet 16 x 12 Advanced Application Controller with real-time clock                                |
| BAC-A1616BC | BACnet 16 x 16 Building Controller (see <a href="#">page 14</a> )                                  |
| CAN-A168EIO | 16 x 8 I/O expansion module for the BAC-A1616BC Building Controller (see <a href="#">page 15</a> ) |



### Smoke Control System (UUKL): Firefighters' Smoke Control Station (with BAC-58xx)



#### Smoke Control Terms

**Smoke Control System**—A system that modifies the movement of smoke in ways to provide safety for the occupants of a building, aid firefighters, and reduce property damage.

**Fire Alarm Control Panel (FACP)**—A device for receiving and announcing the location of a fire, based upon input from smoke/flame/heat detectors, manual call points, or pull stations. It also sends a signal to the FSCS to initiate programmed smoke control procedures.

**Firefighters' Smoke Control Station (FSCS)**—A panel for use by the fire department for monitoring and overriding smoke-control systems and equipment. It receives fire/smoke information from an FACP and may initiate automatic pressurization and depressurization of appropriate zones to contain/exhaust smoke and allow for safe evacuation of the building.

**UL (Underwriters Laboratories)**—A testing laboratory that develops standards and test procedures for materials, components, assemblies, tools, equipment, and procedures that relate mainly to product safety and utility.

**UUKL Listing**—An Underwriters Laboratories' category code under UL 864, Control Units and Accessories for Fire Alarm Systems. UUKL is for products covered under the description "Smoke Control System Equipment."

**National Fire Protection Association (NFPA)**—An independent, voluntary-membership, nonprofit organization that is a leading source of technical background, data, and consumer advice on fire protection, problems, and prevention.

An FSCS (Firefighters' Smoke Control Station) is a panel for use by the fire department for monitoring and overriding smoke-control systems and equipment. It receives fire/smoke information from an FACP (Fire Alarm Control Panel) and may initiate automatic pressurization and depressurization of appropriate zones to contain/exhaust smoke and allow for safe evacuation of the building.

The controllers and accessories listed below are listed to the **ninth** edition of UL 864 (UUKL). For more information about them, see their respective sections in this catalog and/or their data sheets.

For information about **custom smoke control panels** that include UUKL-listed KMC BACnet controllers, contact KMC technical support.

#### Controller Models (UL 864 Listed)

BAC-5801	BACnet 8 x 8 Advanced Application Controller with real-time clock (see <a href="#">page 9</a> )
BAC-5802	BACnet 8 x 8 Advanced Application Controller without real-time clock
BAC-5831	BACnet 16 x 12 Advanced Application Controller with real-time clock

#### Accessories (UL 864 Listed)

HPO-0070*	Twelve-output transient suppressor board
HPO-0071*	Eight-input transient suppressor board
HPO-6701**	Triac, zero-cross switching, optical isolation
HPO-6704**	4–20 mA current loop, short protection
KMD-5567*	Network surge suppressor module and connector
KMD-5575	Network repeater-isolator
XEE-6112-100*	Transformer, 120-to-24 VAC, 100 VA, dual hub

\*NOTE: These accessories are required in smoke control systems.

\*\*NOTE: HPO-6702/6703/6705 override boards are **not** UL 864 listed. Only the HPO-6701/6704 are.

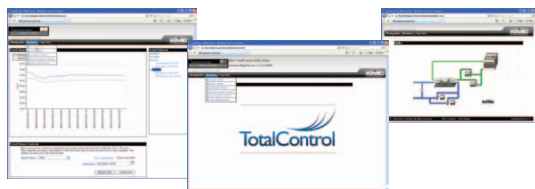




# Software

## TC Series

### TotalControl–Building Services Building Automation Software



The **TotalControl suite of programs** includes:

- **Design Studio**—Master operator workstation software to build browser-based operator pages, configure controllers, manage the database, and set-up trends, schedules, and alarms (see below)
- **Building Services**—Collects data from multiple BAS protocols, stores trends, schedules, and alarms data in a central database, and serves web pages
- **Web interface**—Authorized operators use a standard Internet browser to view and manage the building automation services with pages created with Design Studio; pages are served from the Building Services computer

**Building Services** collects, stores, and routes data between a building automation network and an operator interface or workstation. Built on XML and Microsoft .NET Framework, this program is just one part of a powerful suite of software tools. Once the TotalControl site is configured and the graphic pages are constructed with Design Studio, operators manage the site with web browser access. Design Studio is not required for daily operation.

Building Services includes the following components.

- Alarm management service
- Trend logging service
- A system monitor engine that coordinates movement of data among the other services
- Scheduling service
- An SQL server to store and retrieve data
- A Protocol Driver Service (PDS) links TotalControl Building Services to a building automation protocol
- Internet browser accessibility modules

TotalControl Building Services stores data in an included Structured Query Language (SQL) database server. Microsoft SQL Server 2005 Express, a lightweight version of the Microsoft SQL Server family, is included with Building Services. KMC Controls recommends upgrading to Microsoft SQL Server Workgroup, Standard, or Enterprise edition on sites with more than 300 controllers.

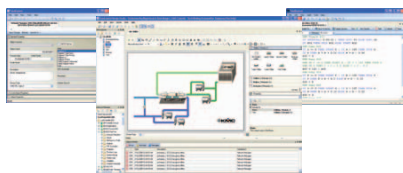
TotalControl TC-BAC and TC-BACUNL when used with TotalControl Design Studio, is a BACnet Testing Laboratory (BTL) listed Advanced Operator Workstation.

#### Models

SEE: [TotalControl series](#) web page and [data sheet](#) for details.

## TC Series

### TotalControl–Design Studio Advanced Operator Workstation Software



TotalControl Design Studio, when used as part of TC-BAC Building Services, is a BACnet Testing Laboratory listed Advanced Operator Workstation, used for configuring a building automation system. Built on XML and Microsoft .Net, this program is just one part of a powerful suite of software tools. Design Studio includes Graphic Designer, Network Manager, Site Explorer, Resource Manager, Graphics Library, Web Administration, Controller Configuration Tool, and Control Basic Editor. TotalControl Design Studio features:

- Standard Microsoft Windows interface—Quickly locate controllers, objects, and points from an expandable list of controllers and devices
- Create custom graphic pages—Design Studio includes an extensive graphics library of HVAC components with which you can build operator interface pages and then publish them for Internet browser access
- Configure controllers—Individual devices and controllers are configured with standard Windows text fields and drop-down lists
- Alarm management—Use Design Studio to set up alarms to notify key operators of critical events
- View and acknowledge alarms—Set up email notification with custom messages for key operators

- Program with Control Basic—The TotalControl Code Editor is the tool with which Control Basic programs are entered and edited in KMC controllers
- View reports—Use TotalControl reports for site commissioning and recording system operation
- Configure trends—Configure TotalControl to collect trend data from either controller based trends or by direct polling of a point and storing the data in the SQL database; TotalControl supports controller, database, and PC trends
- Scheduling—Schedule special holidays, maintenance schedules, and special days for up to a full year
- Supported protocols—Design Studio, through a connection to TotalControl Building Services, supports the configuration of controllers operating on BACnet, KMDigital, as well as OPC
- Security—TotalControl security locks out tampering and still allows authorized operators to make changes
- Internet browser site access—Once the site is configured and the graphic pages are constructed, operators manage the site with an internet browser access; Design Studio is not required for daily operation

#### Models

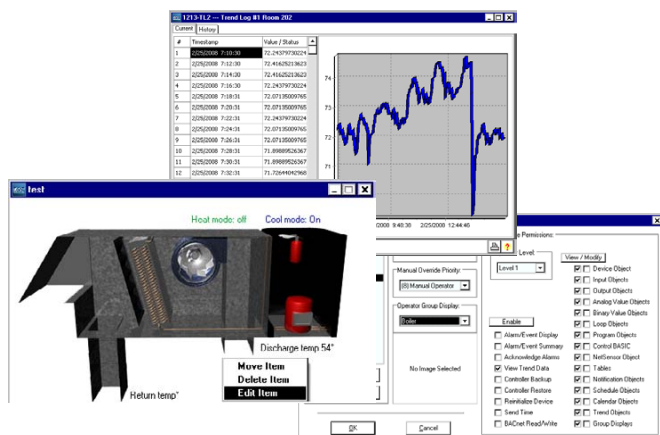
SEE: [TotalControl series](#) web page and [data sheet](#) for details.



## Software

### BAC-5000

### BACstage Operator Workstation



BACstage™ is a basic software tool with which you can program KMC BACnet controllers for a building automation system. Highlights include:

- Worksheet style entry and drop-down list boxes to make programming quick and easy
- Quickly create graphical user interfaces with easy to use drag-and-drop group displays
- Password protected

#### Models

BAC-5000	BACstage operator workstation
HW-KEY	KMC Controls hardware license key

Each copy of BACstage is licensed to end-users for use on one computer at a time. Order a hardware license key (HW-KEY) for each copy of BACstage. The hardware license key requires a dedicated USB port.

SEE ALSO: [BAC-5000](#) web page for details.

#### Accessories

KMD-5559	CommTalk Communications Interface
SP-022	Digital Designer's Guide

### Main Features

#### Easy Programming

- Required for full access to features in KMC BACnet controllers starting with firmware releases 1.7
- Configure KMC Controls BACnet devices with MAC addresses, device instance numbers and baud rate
- Configure objects in third-party controllers
- Configure standard BACnet objects in controllers
- Identify inputs, outputs, and other functions with easy to remember names and descriptions
- Assign standard device types for both analog and digital objects
- Full control over built-in PID control loop routines
- Write, compile, and send building automation programs with the BACnet Control Basic editor
- Automatically synchronize system time to computer time
- Save configuration files to disk
- Prepare configuration files off-line with the simulator mode

#### Security

- Security locks out tampering and still permits authorized operators to make system changes
- Password protection for multiple users prevents unauthorized access
- Logs operator sign-in, sign-out, and other significant operator action
- Choose from four preset levels or create a custom level for each operator

#### Custom group displays

- Design and construct operator friendly graphic interfaces with BACstage group displays
- Use the extensive KMC Controls graphic libraries to build custom graphics for chillers, boilers, roof top units, air handlers, and more
- Add motion to displays with animation files
- Easily drag-and-drop links to other group displays or object properties on the display
- Add links from site or floor plans to critical equipment or control points
- Use graphics from any program that generates BMP, JPG, GIF, WMF, or EMF file types

#### Manage alarms

- Program, view, and acknowledge alarms.
- Manage recipient lists in notification class objects
- View an alarm summary for each device

#### Data logging

- Retrieve and display temperature, humidity, or any performance data stored in each controller
- View trend objects from any controller
- Display data as graphs or text
- Retrieve and save logs for analysis in programs such as Excel

#### Scheduling

- Program BACnet schedule objects in individual controllers for recurring daily activities
- Create special days, such as holidays, in the controller's calendar objects that override the weekly schedules

#### Connectivity

- MS/TP
- Ethernet 802.3
- Ethernet IP
- Register as foreign device to a BBMD (BACnet broadcast management device)
- PTP including modem



# Additional Information

## Accessories

This catalog supplements the information in the larger **SP-071 KMC Catalog (Electronic and Pneumatic Controls)**. See that catalog for information about the many input, output, and other devices for the digital controllers.

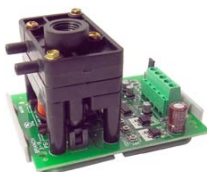
Output options include:

- **Actuators** (10 to 320 in.-lb., tri-state/proportional/two-position inputs, selectable fail-safe direction, and other control options)
- **Valves** (1/2" to 6", 2-way and 3-way, and various actuator options)



Input options include:

- **Sensors and transmitters** (temperature, humidity, air flow, pressure, smoke, CO, CO<sub>2</sub>, and refrigerant)
- **Switches** (limit, position, and pressure)
- **Transducers/converters** (pressure, air flow, current, voltage, and pulse width)



For digital sensors (NetSensors) and digital accessories (including literature about digital products), see the Digital Sensors and Accessories Catalog Supplement (SP-094).



Other miscellaneous accessory options include:

- **Controllers** (analog electronic, and low limit)
- **Relays** (multiple inputs, outputs, and control options)
- **Thermostats** (analog electronic)
- **Enclosures** (various sizes for relays, controllers, and actuators)

Many of these are used with KMC's older analog electronic controllers as well as with the latest digital controllers.



**NOTE:** For KMDigital products, see the KMDigital Catalog Supplement (SP-093).







# Index

## Symbols

4 x 4 Controller: [12, 13](#)  
8 x 8 Controller: [9, 10](#)  
10 x 9 Controller with Integral Sensors: [8](#)  
16 x 8 Expansion Module: [15](#)  
16 x 12 Controller: [9](#)  
16 x 16 Controller: [14](#)

## A

Advanced Application Controllers (AAC): [8](#)  
AHU (Air Handling Unit): [8, 13](#)

## B

BAC-12xxxx/13xxxx/14xxxx: [8](#)  
BAC-5000: [19](#)  
BAC-5050: [15](#)  
BAC-5801/5802: [9](#)  
BAC-5831: [9](#)  
BAC-5841-16/5842-16: [11](#)  
BAC-5841/5842: [10](#)  
BAC-7001/7051: [12](#)  
BAC-7003/7053: [12](#)  
BAC-7301/7301C: [13](#)  
BAC-7302/7302C: [13](#)  
BAC-7401/7401C: [13](#)  
BAC-A1616BC: [14](#)  
BACstage: [19](#)  
Building Controller (B-BC): [14](#)

## C

CAN-A168EIO: [15](#)  
Condensed Catalog (Electronic and Pneumatic Controls): [4, 20](#)

## E

Enclosures: [20](#)  
Expansion Module, Building Controller: [15](#)

## F

FACP: [17](#)  
FCU (Fan Coil Unit): [8, 13](#)  
Fire Alarm Control Panel: [17](#)  
Firefighters' Smoke Control Station: [17](#)  
FlexStat: [8](#)  
FSCS: [17](#)  
FullBAC Router: [15](#)

## H

HPU (Heat Pump Unit): [8, 13](#)

## I

Input/Output Modules: [15](#)  
I/O Expansion Module: [15](#)

## K

KMC Controls  
Company Information: [5](#)  
Web Site: [5](#)

## L

Lighting: [16](#)

## M

Modular Controller Connections: [10](#)

## P

Publications: [5](#)

## R

Relays  
External/Accessory: [20](#)  
Relays, in Controllers: [8, 12](#)  
Router: [15](#)  
RTU (Roof Top Unit): [8, 13](#)

## S

Sample Networks: [21](#)  
Selection Guides: [6](#)  
Smoke Control: [17](#)  
Software  
BACstage: [19](#)  
TotalControl: [18](#)  
SP-071: [4](#)

## T

TotalControl (TC Series): [18](#)  
Triacs: [12, 13](#)

## U

UFAD (Under Floor Air Distribution): [10](#)  
UL 864: [17](#)  
UUKL: [17](#)

## V

VAV (Variable Air Volume): [11, 12](#)

## W

Web Site: [5](#)

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