KMC CONTROLS

Condensed Catalog

BAC-A1616BC
BACnet Building Controller

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TotalControl
Building Services

TotalControl
Building Services

Digital Controls

building your comfort zone™

Condensed Catalog

Digital Controls

Issue: September 2008

How to Maximize Using this Catalog!

Tips for Print and On-line Versions

Use one of the following references to locate information about a particular product:

- **Contents**—The table of contents lists all products alphabetically by application. BACnet products, for example, are followed by KMDigital products.

- **Index**—All catalogued KMC Controls model/part numbers as well as various topics are listed alphabetically.

- **Reference**—This section contains a series of selection guides and other material (abbreviations, codes, definitions, and sample networks) to guide the purchaser to the correct digital control.

Sections and products by section are in alphabetical order wherever feasible. This includes categories of sections (e.g., Accessories, BACnet Controllers/Hardware, KMDigital Controllers/ Hardware, NetSensors/NetView, and Software) and product model numbers within their respective sections (e.g., BAC-5801/5802, BAC-5831, and BAC-7001/7003).

Cross-References (SEE ALSO) refer to related sections.

> SEE ALSO: The *Abbreviations, Codes, and Definitions* section.

NOTE: This catalog supplements the information in the SP-071 Condensed Catalog (Electronic and Pneumatic Controls). See that catalog for information about various input and output devices for the digital controllers.

Tips for On-line Navigation

This catalog is available in printed and online formats. **In the Adobe® Acrobat® PDF version of this catalog**, the following items have (blue) **hyperlinks** to their referred pages:

- Contents topics (lines)
- Index page numbers
- Cross-reference (SEE ALSO) italicized references

Click on a hyperlink to easily go to that page. In the PDF files, the **bookmarks** on the left of the screen also offer easy navigation to the relevant sections, and the **search function** (Ctrl key + F) can find appearances of entered text.

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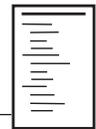
Introduction

Finding Information in this Catalog

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Products in this Catalog

Digital controls for heating, air conditioning, and ventilation shown in this catalog are available through the KMC Control's Authorized Installation Contractors (AICs) that have been approved to promote, sell, and install KMC digital systems. Approval is granted when one or more personnel from the AIC complete the required digital products training program at KMC Controls. Some of the controls are also available through wholesalers.

Although every effort is made to make the information in this catalog accurate, not all models listed or implied by a chart 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.

This catalog supplements the information in the larger SP-071 Condensed Catalog (Electronic and Pneumatic Controls). See that catalog for information about various input and output devices for the digital controllers. **Our analog electronic line includes actuators, power supplies, 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.**

SP-070

SP-071

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 1970. KMC remains the only privately held US controls manufacturer with a full line of digital, electronic, and pneumatic products in the USA.

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 9001:2000 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.

KMC Web Site and Publications

The purpose of the award-winning **www.kmccontrols.com** is to support you, our valued partners in your KMC-related endeavors. Once you log in, general and product-specific information will be at your fingertips.

To get the most from the site, log in using your current user name and password. Your rep login determines what information you can access. The "Portal" button will allow you to go to the "Manage Account" page where you can edit your profile and specify preferences for receiving automatic information updates.

Most product information is available through the "Products" button or the Product Search field. In the Product Wizard, 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, you must be logged in to see product pricing and other associated information.

The "Support > Downloads" button offers access to numerous files that are organized into Marketing/Sales Information and Technical Support information. You can also download and print groups of data sheets from the catalog files.

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 awards for publication excellence in recent years.

KMC Policies and General Information

Contact Information

Customer Service

- Phone: 866.302.4562
- Fax: 800.276.5555
- Email: customerservice@kmccontrols.com

Technical Support

- Phone: 866.303.4562
- Fax: 800.276.5555

Orders

Any purchase order form may be used to send an order to KMC Controls. Orders are accepted by email, facsimile or US Mail. Partial orders will not be shipped unless specified.

Product Availability—Scheduled Ship Date

The normal lead time for most products is maintained for one week from receipt of order. Unless otherwise requested, a ship date will be scheduled one week after receipt of order. Every attempt will be made to ship on, or before, the scheduled ship date. Due to product demands, and made-to-order products, some products may not be available for one week shipping. Notification will be made with the anticipated ship date for products not available for one week lead times.

Order Acknowledgments

KMC Controls will send order acknowledgements for all purchase orders via email or facsimile.

Expedite Fee

An order with a requested ship date less than the normal lead time will be assessed an Expedite Fee. This fee will be equal to $15.00 Net or 5% of the Net value of the products expedited, whichever is greater, not to exceed $100.00. The $100.00 maximum is only applicable to products that do not require special manufacture or order.

An order will only be expedited if:

- Buyer's account is current
- Order is received by 12:30 PM Eastern Standard Time
- Order can ship via courier service such as UPS or FedEx
- The products are in stock
- Customer Service agrees that the products can be expedited

If the products are not in stock and cannot be shipped on the requested ship date, notification of the anticipated ship date will be made. The Expedite Fee will apply if the anticipated ship date is earlier than the original scheduled, or revised scheduled ship date.

Advanced warranty replacement parts will not be assessed the Expedite Fee. The Incident (RMA) Number assigned by Customer Service must be specified on the purchase order.

Handling Fee

A Handling Fee of $25.00 Net will be assessed for any order under $50.00 Net. Expedite Fees and COD Fees will be included as part of the order value.

COD Fee

A COD Fee of $25.00 will be assessed to any shipment requiring Cash On Delivery. COD orders cannot be expedited and may require an extension of the normal lead time for shipment.

Shipping—Insurance

All courier freight charges will be prepaid and added to the invoice unless collect or third-party billing is requested. UPS has been selected as the most cost-effective and expeditious method of shipping. KMC Controls insures all UPS shipments for the total net value of the shipment unless requested by the Buyer in writing not to insure shipments. UPS insures each carton handled for $100.00 maximum at no additional charge. The additional UPS insurance is currently $0.55 per $100.00 value over the first $100.00 with a minimum charge of $1.50.

Refusal of UPS insurance must be stated on the order or in a letter to KMC Controls. Verbal notification is not acceptable. KMC Controls is not responsible for damaged shipments in which the insurance was refused. Buyer is entirely responsible for the total invoice, less the $100.00 standard UPS per shipment insurance, for damaged shipments in which insurance was refused.

Shipments over 70 pounds are sent via truck line and are shipped freight collect. Buyer must specify the truck line or the least expensive line will be selected. Damage claims must be handled direct with the truck line. Buyer is entirely responsible for the total invoice.

Inspect ALL shipments immediately upon receipt for damages caused during shipment and notify both the carrier and KMC Controls of any damage.

Credit Hold

Under KMC Controls' Terms and Conditions, sales are Net 30 Days. Terms begin on the day of the shipment, which is also the invoice date. A service charge of 1.5% per month is assessed the first of each month to any unpaid invoice over 30 days. Service charges are not optional. Any unpaid invoice over 60 days can result in being placed on credit hold. Orders will not be released to production if Buyer's account is on credit hold. Purchasing personnel and Accounts Payable personnel will be notified of any hold status.

Return Policy

This return policy applies to all products returned to KMC Controls within their respective warranty periods.

The warranty period begins on the date products are shipped from KMC Controls or its supplier. All products have a 42-month warranty with the exception of the following actuator series that have a 60-month warranty:

- MEP-1200 series
- MEP-4000/4800 series
- MEP-5000 series
- MEP-7000/7200/7500/7700/7800 series

NOTE: **In markets outside of the United States and Canada,** the Company reserves the right to further limit our factory warranty coverage due to the cost of transshipment of warranty goods between countries. Customers in these countries should consult directly with KMC Controls to establish the warranty policies that will be in effect in their markets.

Products may be returned to KMC Controls for credit or replacement by contacting your Customer Service Representative or through completion of Material Return Form GN-0042 and returning products transportation prepaid. Products should be returned to:

KMC Controls
19514 Industrial Drive
New Paris, IN 46553
Attn: Returns

Returned products must be adequately packaged to protect from damage during transportation. This will allow KMC Quality Control the ability to more accurately evaluate returned products and continuously achieve quality improvement.

When returned products are received, KMC Controls will notify the customer of receipt and verify and confirm the Incident Number. Replacement product, if required, will be shipped within 72 hours when possible. (The company reserves the right to replace any device with a functional equivalent if available). A return summary will be provided no later than two weeks after receipt of the return.

Product that is out of warranty will be held for two weeks awaiting disposition from the customer.

Product being returned for restocking must be no older than six months, new and unused and in the original packaging. A 10% restocking fee will be assessed for actuators, 15% for valves and 25% for all other items.

KMC Terms and Conditions

Acceptance—Agreement

Any acceptance of a customer's purchase order is limited to acceptance of the express terms herein. Any proposal for additional or different terms, or any attempt by the Buyer to vary in any degree any of the terms of this offer in Buyer's acceptance is hereby objected to and rejected, but such proposals shall not operate as a rejection of this offer unless such variances are in the terms of the description, quantity, price or delivery scheduled of the goods, but shall be deemed a material alteration thereof, and this offer shall be deemed accepted by the Buyer without said additional or different terms. Additional or different terms and conditions shall be deemed material and are objected to or rejected, but shall not operate as a rejection of the Buyer's offer unless it contains variances in the terms of the description, quantity, price or delivery schedule of the goods.

Warranty

Seller warrants that its product sold hereunder will, for 42 months from the date the product is shipped, be free and clear of all liens and encumbrances and will be free from defects in material and workmanship and will conform to Seller's applicable specifications or, THE FOREGOING WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES NOT EXPRESSLY SET FORTH HEREIN, WHETHER EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR PURPOSE. KMC Controls shall not be liable for any incidental or consequential damages, losses or expenses directly or indirectly arising from the sale, handling or use of the products or from any other cause relating thereto and KMC Controls' liability hereunder, in any case, is expressly limited to the repair or replacement (at KMC Controls' option) of products not complying with this agreement or, at KMC Controls' election, to the repayment or crediting of Buyer with an amount equal to the purchase price of such products whether such claims are for breach of warranty or negligence. No representation or warranty, expressed or implied, made by any sales representative, or other agent or representative of the Seller which is not specifically set forth herein shall be binding upon the Seller. Seller shall not be liable for any incidental or consequential damages, loses or expenses, directly or indirectly, arising from the sale, handling or use of the goods or from any other cause relating thereto and Seller's liability hereunder, in any case, is expressly limited to the repair or replacement (at Seller's option) of goods not complying with this agreement or, at Seller's election, to the repayment or crediting of Buyer with an amount equal to the purchase price of such goods whether such claims are for breach of warranty or negligence. This warranty extends only to direct customers of the Seller and does not include customer of the Buyer.

In the event the material to be furnished hereunder is claimed to be defective, the Seller shall be given ample opportunity for inspection or, upon request, shall be furnished with a sample of such material. The Seller shall be liable only to replace defective products or to allow credit for such products at his or her option and shall not be liable for any transportation or installation charge, fabricating or other expense or for any loss or damages of any kind, whether arising from delay, breach or warranty or any other cause whatsoever. All material shall be furnished subject to the Seller's standard manufacturing and commercial variations and practice. Any claim must be made within 30 days after receipt of the materials hereunder. Buyer shall set aside, protect and hold such goods without further processing until Seller has an opportunity to inspect and advise of the disposition, if any, to be made of such goods. In no event shall any goods be returned, reworked or scrapped by the Buyer without the express written authorization of the Seller.

NOTE: **In markets outside of the United States and Canada,** the Company reserves the right to further limit our factory warranty coverage due to the cost of transshipment of warranty goods between countries. Customers in these countries should consult directly with KMC Controls to establish the warranty policies that will be in effect in their markets.

Force Majeure Clause

Fulfillment of any order is contingent upon the availability of materials. Seller shall not be liable for any delay in delivery or for non-delivery in whole or in part caused by the occurrence of any contingency beyond the control of either the Seller or suppliers to the Seller including but not limited to war, sabotage, acts of civil disobedience, failure or delay in transportation, act of any government or agency or subdivision thereof, judicial action, labor dispute, fire, accident, explosion, epidemic, quarantine, restrictions, storm, flood, earthquake or acts of God, shortage of labor, fuel, raw material or machinery or technical failure where Seller has exercised ordinary care in the prevention thereof. If any contingency occurs, Seller may allocate production and deliveries among Seller's customers. If the Seller, in its sole discretion, determines that Seller's performance hereunder would result in a loss to Seller on this sale, as computed under Seller's normal accounting procedures because of causes beyond Seller's control, then the Seller may terminate this agreement in whole or in part without liability for any delay in the delivery of or failure to deliver the goods sold hereunder.

Confidential Information

All drawings, diagrams, specifications, pricing and other materials furnished by the Seller and identified as confidential, relating to the use and service of articles furnished and the information therein, are proprietary of Seller. Such materials have been developed at great expense and they contain trade secrets of the Seller. Buyer may not reproduce or distribute such materials except to Buyer's employees who may use the articles as part of their duties. All such materials relating to the article supplied directly by Seller (except information as may be established to be in the public domain or disclosed pursuant to judicial government action) shall be received in confidence and Buyer shall exercise reasonable care to hold such information in confidence.

Credit

Sales are Net 30 Days. All invoices paid after due date will be assessed the late payment service charge of eighteen percent (18%) per annum or the maximum allowed by applicable law, whichever is lower. If, in the Seller's judgment, the financial condition of the purchaser at the time merchandise is ready for shipment does not justify the terms specified, the Seller reserves the right to change these terms or to require full or partial payment in advance. Seller may, at any time, suspend performance of any order or require payment in case, security or other adequate assurance satisfactory to Seller when in Seller's opinion, the financial condition of Buyer or other grounds for insecurity warrant such action. All sales are subject to the approval of Seller's credit department.

Prices

The prices will be adjusted to the Seller's price in effect at the time of order. If there is a delay in completion of shipment of an order due to any change requested by the Buyer or as a result of any delay on Buyer's part in furnishing information required for completion of the order, the price agreed upon at the time of acceptance of the order is subject to change. Prices are F.O.B. KMC Controls corporate office and/or vendor facility and are exclusive of all taxes.

Risk of Loss

Delivery shall occur and risk of loss shall pass to the Buyer upon delivery of the material to the carrier at the point of shipment. Transportation shall be at Buyer's sole risk and expense and any claim for loss or damage in transit shall be against the carrier only.

Delivery

Any quoted delivery date is the best estimate possible based upon current and anticipated manufacturing capabilities of when the product will be shipped. Seller assumes no liability for loss, damage or consequential damages due to delays.

General Provisions

Any cause of action arising from this agreement, or breach of it, must be commenced within one year after the cause of action occurs, provided that this limitation shall not apply to actions by Seller to recover the purchase price of articles sold hereunder. Seller has the right to correct any stenographical or clerical errors in any of the writings issued by it. The terms and conditions of sale and any description in Seller's price (listing) manual and these terms and conditions constitute a complete and exclusive statement of the terms and conditions of the sale of the goods by Seller to Buyer. There are no other promises, conditions, understandings, representations or warranties. This agreement may be modified only in writing signed by the Seller. No waiver of any right will be effective against Seller unless supported by consideration and expressly stated in the writing signed by the Seller. The failure to Seller to enforce any right will not be construed as a waiver of Seller's right to performance in the future. Buyer may not assign any right to, or delegate any performance owned under, the agreement without the written consent of the Seller. Seller shall have the right to credit toward the payment of any monies that may become due Seller hereunder and any sums which may now or hereafter be owned to Buyer.

Material Return Form

Form must be completed in its entirety to expedite the material return process.
Incomplete forms or inaccuracies will cause delays.

Submitted By: _____ Date: _____

Company: _____

Address: _____

City: _____ State: _____

Tel. No. : _____ Fax. No. : _____ Email: _____

Select Option:

☐ **Credit Account**
    Advanced replacement purchase order number: _____ Date:_____
    Note: Credit cannot be issued without an advanced replacement order.
    Forms without an advanced replacement order will automatically receive New Product Replacement.

☐ **Replace with New Product**

☐ **Restocking Request**
    KMC Controls' Invoice Number: _____ Date:_____

Return Product to: ☐ **Address Above**   or   ☐ **Address Below**

Company: _____ Attn:_____

Address: _____

City: _____ State: _____

Tel. No. : _____ Fax. No. : _____ Email: _____

Qty.	Model Number	Date Code	Specific Reason for Return	KMC Use

Please carefully package and ship product returns prepaid to:

KMC Controls
Return Material
19476 Industrial Drive
New Paris, Indiana 46553

GN-0042
Rev.: 8-30-04

Issue Number: _____ *(Factory Assigned)*

P. O. Box 497	19476 Industrial Drive	New Paris, IN 46553	Phone (574) 831-5250	Fax (574) 831-4133

Digital Controls   13

Featured New Products

BAC-A1616BAC
BACnet Building Controller

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**, **web server**, and **expandable I/O** in a native BACnet device.

Features and benefits include:

• Web server allows a remote web browser to configure I/Os, set-up objects, and monitor values (configuration/monitoring also available through TotalControl) as well as host custom interface graphics

• Firmware upgradable (without requiring physical access) through the web or Ethernet connection, allowing easy updates using nothing more than a web browser

• Up to 7 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)

• Up to 32 Control Basic custom program sequences for optimal control of a central plant, air handlers, and other connected equipment

• High-performance 32-bit processor

• Dynamic allocation of memory resources provides flexible use of scheduling, trending, and exception reporting in small- to medium-sized buildings without requiring a personal computer

• Meets or exceeds the specifications in ANSI/ASHRAE BACnet Standard 135-2004 for BACnet Building Controllers

> **SEE ALSO:** *BAC-A1616BC BACnet Building Controller* in the *BACnet Controllers and Hardware* section.

BAC-10000 Series
FlexStat Programmable Thermostats

This series of intelligent temperature/humidity-sensing, wall-mounted, thermostat/controllers are native BACnet Advanced Application Controllers (B-AAC) for use in a BACnet system. The FlexStat simplifies networked zone control for common packaged HVAC equipment, such as packaged roof top units, fan coil units, heat pumps, and other similar applications. In addition, applications such as pressure-dependent VAV, terminal reheat, and medium-sized central-station air-handling-equipment applications may also be addressed through the libraries of programs built into the devices.

The on-board library of programs permits rapid configuration of a wide range of HVAC control applications, including, for example, single- and multi-stage packaged and unitary split systems, factory-packaged economizers, field-applied economizers, water-source and air-to-air heat pumps, fan coil units, and central-station air handling units.

The FlexStat also provides the capability to customize the standard library of sequences using KMC's BACstage or TotalControl. This enables a local authorized KMC installing contractor to adapt the standard library to unique site needs and application-specific requirements encountered on many projects on a case-by-case basis.

Standard hardware options include a mix of output configurations (relays and analog outputs), on-board humidity sensing, and inputs for additional analog and binary type remote external sensors, such as occupancy and CO_2 sensors. The additional physical inputs are integrated with the standard on-board control sequences to provide the option for intermittent-occupancy and CO_2-based demand ventilation control while using a simple wall-mounted thermostat/controller device.
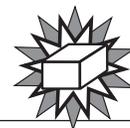
> **SEE ALSO:** *BAC-10000 Series FlexStat Programmable Thermostats* in the *BACnet Controllers and Hardware* section.

H8163 Series
Energy Meters

These energy meters combine highly accurate industrial-grade **split-core current transducers (CTs)** and precision microprocessor-based **metering electronics in a single package** for exceptional metering accuracy and reduced metering system installed cost.

The unique design and installer-friendly features of the energy meter greatly reduce the time and overall cost of installing an energy metering system. Split-core CTs with color-coded leads install very quickly, clamping directly to the electrical conductor and eliminating the need for mounting brackets. For excellent total system accuracies, each meter is factory-matched and calibrated with quickly installed split-core CTs.

The meter automatically detects and compensates for phase reversal, eliminating CT load orientation concerns. The meter provides an extended input voltage range, a pulse output for control systems, and a phase loss alarm output for equipment protection.

As a stand-alone unit, the high-resolution **backlit LCD display** allows clear readings under any lighting conditions to reduce the risk of misinterpretation. When equipped with an **optional internal BACnet or Modbus communications board**, the energy meter can report (through an EIA-485 connection to a building automation system) up to 26 energy and power variables, including volts, amperes, power factor, kW, kVAR, kVA, and kWh on various lines.

> **SEE ALSO:** *H8163 Series* in the *BACnet Controllers and Hardware* section.

KMD-1162
Hospitality NetSensor

This is a temperature-sensing, wall-mounted, programmable operator interface for use in a KMC direct digital controls system. It includes intuitive-to-use setpoint buttons, and **two slide switches for heating/cooling change over and fan speed**. (Humidity is not sensed or displayed, and it does not have a hinged cover.) Four-pin EIA-485 data port on the underside allows temporary and easy direct communication with the connected controller via a local access port.

> **SEE ALSO:** The *NetSensors* section.

KMD-1183/1185
NetSensors

This is a temperature/humidity-sensing, wall-mounted, programmable operator interface for use in a KMC direct digital controls system. Three of its nine function keys can be reassigned by the user. Compared to the KMD-1161/1164/1181/1184, the KMD-1183/1185 has many similar features except that it has different button functions/labels:

- The center **Mode** button allows easy cycling between display/set options for room temperature, cooling setpoint, heating setpoint, and override.

- Flipping open the cover allows access to six function buttons: **Cooling Setpoint**, **Heating Setpoint**, **Override**, **Time***, **Alarm***, **Humidity***, and (two buttons pressed together) **Day of Week***. (*Three buttons and a fourth combination of buttons may be reassigned and programmed with the controller to display or control the state of any point in the attached controller.)

The only difference between the KMD-1183 and the KMD-1185 is how each NetSensor handles an alarm state signalled by the connected controller. See the chart in the NetSensor section for more information.

> **SEE ALSO:** The *NetSensors* section.
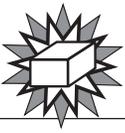
KMC Lighting
Lighting Controls and Accessories

The KMC Controls lighting cabinets provide solutions to lighting applications of all sizes. They can be installed as a single cabinet or easily combined with other cabinets for a complete integrated system.

With eight (in 8-relay cabinet) or twelve (in 24- and 48-relay cabinets) discrete, analog inputs, these cabinets readily connect occupancy sensors, photocells, switches, and a variety of other analog input devices. Flexible networked digital switch models are also available for control from multiple locations. An input card provides an additional 36 discrete, analog inputs in the 24 and 48 relay cabinets.

The master lighting control cabinet is used to configure the entire system. Designed for intuitive programming and operation, lighting cabinets from KMC Controls feature a large keypad and a two-line, sixteen-character LCD screen to facilitate programming of all switching system and ATC (Astronomic Time Clock) parameters.

The integrated ATC automates switching with up to 999 user-defined events and 999 holiday schedules. ATC events may be triggered by time of day or by a time offset from either sunrise or sunset. System location is programmable by specifying your location. ATC automatically adjusts for daylight savings time and leap year where applicable.
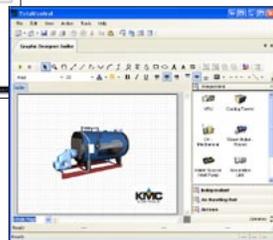
> **SEE ALSO:** *Lighting Controls (KMC Lighting)* in the *BACnet Controllers and Hardware* section.

TC Series
TotalControl Building Services and Design Studio Software
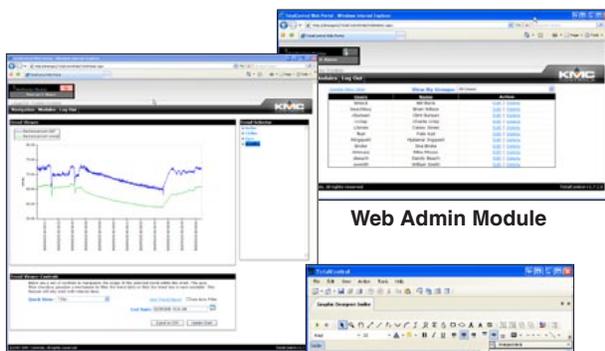
Web Admin Module

Trend Viewer

Graphics Designer

The **TotalControl suite of programs** includes:

- **Design Studio**—Master operator workstation software to build browser-based operator pages, configure controllers, manage the database, as well as set-up trends, schedules, and alarms.

- **Building Services**—Collects data from multiple BAS protocols, stores trends, schedules, and alarms data in a central database, and serves web pages. 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.

The sample screens to the left show just a few of the powerful tools available.

> **SEE ALSO:** *TC Series* in the *Software* section.
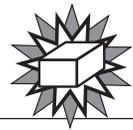
Brochures and Reference Materials

General Information

SB-037 Product Overview Brochure

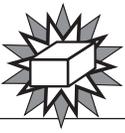**SB-046 Green Buildings Controls Glossary (pocket-sized booklet)**

SB-047 TotalControl Introduction Brochure

SB-048 Green Buildings (LEED) Controls Brochure

SB-052 KMC Corporate Capabilities Brochure

SB-053 KMC Corporate DVDs (Company History, Present & Future)

SB-022 Digital Designer's Guide

SP-071 Condensed Catalog (Electronic and Pneumatic Controls)*

SP-021 (Digital) Product Catalog*

*(NOTE: Catalogs have S**P** numbers, not S**B**.)

These documents may be downloaded from the KMC web site in Adobe Acrobat PDF format. For more general and electronic product promotional products, see the (SP-071) KMC Controls Condensed Catalog (Electronic and Pneumatic Controls). For more detailed product information, see the individual data sheets and/or the (SP-021) Digital Product Catalog sections on the web site.
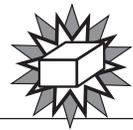
BACnet Products

**SB-001 (BAC-5000)
BACstage Brochure**

**SB-002 (BAC-5050)
FullBAC Router Brochure**
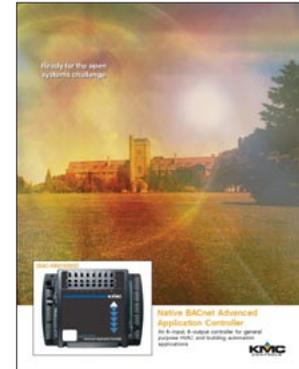
**SB-003 (BAC-5801/5802) Native
BACnet AAC Brochure**
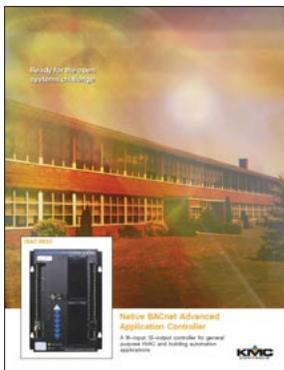
**SB-004 (BAC-5831) Native
BACnet AAC Brochure**
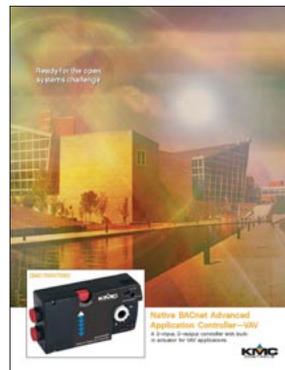
**SB-005 (BAC-7001/7051) Native
BACnet AAC VAV Brochure**
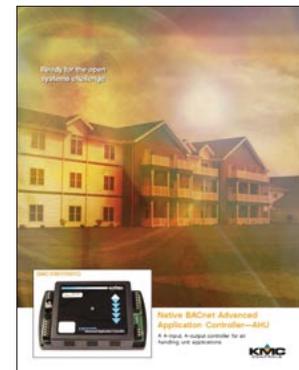
**SB-006 (BAC-7301/7301C) Native
BACnet AAC AHU Brochure**

**SB-010 (BAC-7302/7302C) Native
BACnet AAC RTU Brochure**

**SB-011 (BAC-7003/7053) Native BACnet
AAC VAV FIU Brochure**
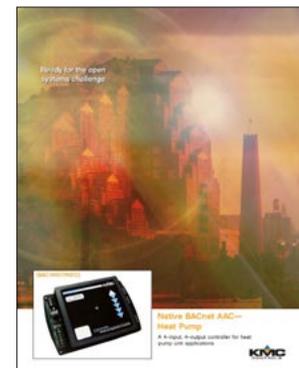
**SB-020 (BAC-7401/7401C) Native
BACnet AAC HPU Brochure**
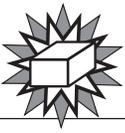
**SB-040 Going BACnet?
Go KMC Brochure**
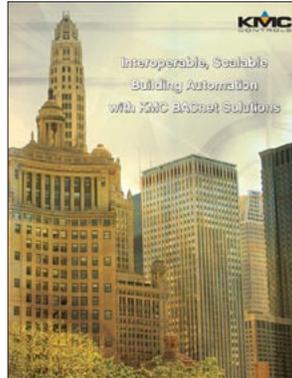
**SB-044 Interoperable, Scalable
Building Automation with KMC
BACnet Solutions BROCHURE (see
also poster version)**

**SB-049 BAC-10000 Series
FlexStat Brochure**
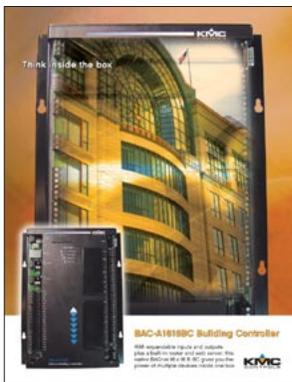
**SB-050 BAC-A1616BC
Building Controller Brochure**

See also:
- **SB-032 in KMDigital
  Brochures section**
- **SB-047 and SB-048 in
  General Brochures section**
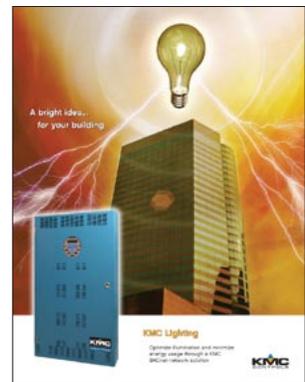
**SB-051 KMC Lighting
Brochure**
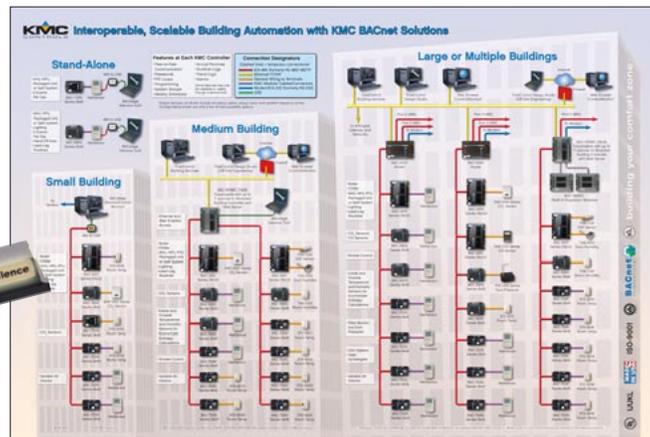
**SB-045 Interoperable, Scalable Building
Automation with KMC BACnet Solutions POSTER
(see also brochure version)**
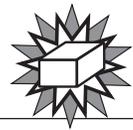
KMDigital Products

SB-012 (KMD-5210) LAN Controller Brochure—see also SB-032 (KMD-5210-001)

SB-013 KMD-5801/5802 Controllers Brochure
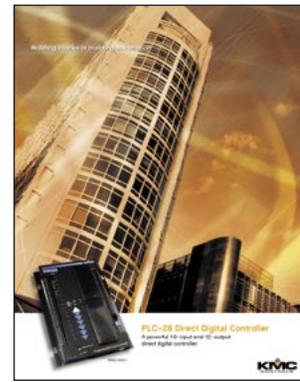
SB-015 (KMD-5831) PLC-28 Controller Brochure

SB-017 KMD-7000 Series VAV Controllers-Actuators Brochure

SB-018 KMD-7x00 Series Controllers Brochure

SB-025 (KMD-5791) WinControl XL Plus Software Brochure
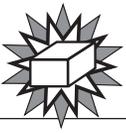
SB-026 (KMD-5270) WebLite Controller Brochure

SB-027 (KMD-5205) LANLite Controller Brochure
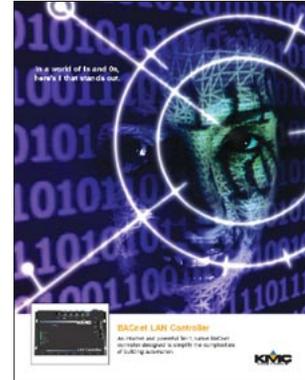
SB-032 (KMD-5210-001) LAN Controller with BACnet Interface Brochure—see also SB-012 (KMD-5210)

SB-042 Scalable Building Automation with KMDigital Controls BROCHURE (see also poster version
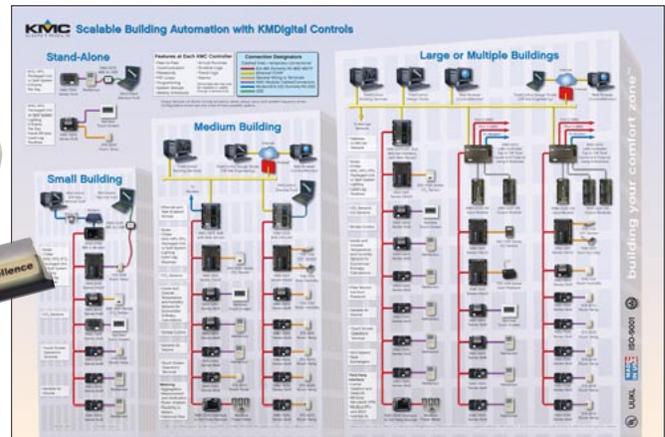
SB-043 Scalable Building Automation with KMDigital Controls POSTER (see also brochure version)

See also: SB-047 and SB-048 in General Brochures section
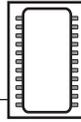
Accessories, Controller
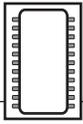
Adapters and Cables

KMD-5600 Series Cables

KMD-5614 — Cable, 7-foot long, **4**-conductor, modular plug both ends (one included w/ KMD-5550/5556/5557/5559/5576)

KMD-5673 — EIA-232 cable, KMD-5270/KMD-5205 to PC, dual female 9-pin D-sub connectors, 6-foot long

KMD-5615 — Cable, 7-foot long, **6**-conductor, modular plug both ends (one included w/ KMD-5550/5556/5557/5559)

KMD-5674 — Modem cable for use with KMD-5270/KMD-5205, female 9-pin and male 25-pin D-sub connectors

KMD-5624 — USB Communicator modular plug to NetSensor/FlexStat cable

Plenum cable with modular connectors, (controller to NetSensor/NetView):
KMD-5689	12 foot
KMD-5690	25 foot
KMD-5691	50 foot
KMD-5692	75 foot

KMD-5672 — EIA-232 cable, KMD-5210/BAC-A1616BC/BAC-5050 serial port to PC, female 9-pin D-sub connector to terminal block

Ribbon cables, KMD-5220/5221 modules to KMD-5210 series:
KMD-5660	6" I/O cable
KMD-5668	9" I/O cable
KMD-5661	14" I/O cable
KMD-5662	19" I/O cable
KMD-5663	24" I/O cable
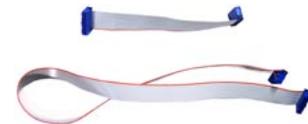
KMD-5620 Series Adapters

KMD-5625-**1*** — Female modular jack to 25-pin male serial D-sub connector, one included with KMD-**5559**

KMD-5625* — One included with KMD-**5550/5556**

KMD-5627 — Female modular jack to 9-pin **male** serial D-sub connector, **four**-conductor

KMD-5628-**1**** — Female modular jack to 9-pin **female** serial D-sub connector, **six**-conductor, one included w/ KMD-**5559**

KMD-5628** — One included with KMD-**5557**

*NOTE: The KMD-5625-**1** and the older KMD-5625 look similar, but they are wired differently and are not interchangeable.

NOTE: The KMD-5628-1** and the older KMD-5628 look similar, but they are wired differently and are not interchangeable.
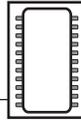
Board Replacements (for KMD-7000 Series)

**HPO-7500 Series
CPU Boards**

HPO-7504 Shown

Models	
HPO-7504	KMD-7011 CPU board
HPO-7504C	KMD-7011C CPU board
HPO-7508	KMD-7013 CPU board
HPO-7508C	KMD-7013C CPU board
HPO-7506	KMD-7101/7102 CPU board
HPO-7506C	KMD-7101/7102C CPU board
HPO-7501	*KMD-7301 CPU board**
HPO-7501C	*KMD-7301C CPU board**
HPO-7507	*KMD-7302 CPU board**
HPO-7507C	*KMD-7302C CPU board**
HPO-7502	*KMD-7401 CPU board**
HPO-7502C	*KMD-7401C CPU board**

*NOTE: The indicated replacement CPU boards are for the older board-only versions of the KMD-7301/7301C/7302/7302C/7401/7401C. **They are not compatible with the current versions of these controllers that have cases.**

**HPO-7600 Series
I/O Boards**
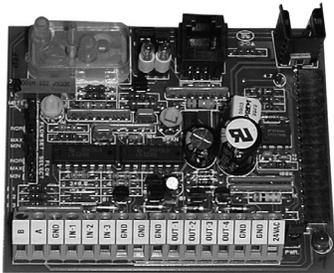
HPO-7604 Shown

Models	
HPO-7604	KMD-7011 output board with sensor
HPO-7608	KMD-7013 tri-state, triac
HPO-7605	KMD-7101 fan coil, no heat relay
HPO-7606	KMD-7102 fan coil with heat relay

Enclosures

HCO-1000/1100 Series Enclosures

NOTE:	See the Enclosures section of SP-071 **KMC Controls Condensed Catalog (Electronic and Pneumatic Controls)** or the relevant data sheets for more details on these enclosures.
HCO-1034	Steel control panel enclosure, 16 x 18 x 6" (406 x 457 x 152 mm)
HCO-1035	Steel control panel enclosure, 20 x 24 x 6" (508 x 610 x 152 mm)
HCO-1036	Steel control panel enclosure, 24 x 36 x 6" (610 x 914 x 152 mm)
HCO-1037	Steel control panel enclosure, two-part, 12 x 12 x 6" (305 x 305 x 152 mm)
HCO-1101	ABS plastic control panel enclosure, two-part, 10-1/2 x 4-3/4 x 3-1/8"
HCO-1121	Top cover only of HCO-1101 enclosure
HCO-1120	Base only of HCO-1101 enclosure
HCO-1102	Steel control enclosure, 10.1 x 2.4 x 7.1" (257 x 62 x 181 mm), provides mounting for one (only) KMD-5801/5802 controller, KMD-7300/7400 series controller, BAC-5801/5802 controller, BAC-7300/7400 series controller, or KMD-5540 series CommTalk protocol interfaces
HMO-1102	5-7/8 x 7" perforated sub-panel (mounts on screw bosses of HCO-1102 and allows other devices, with different mounting holes, to be installed in the enclosure)

HCO-2424/2436 Series Enclosures/Assemblies

HCO-2424/2436 Series

Gray steel control panel enclosures with installed options—see the chart below
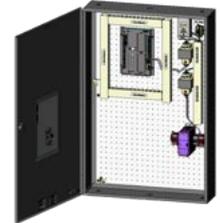
Model #	Dimensions (inches)	Interior Electrical Options*		
		24 VDC Power Supply	24 VAC Trans-formers	Terminal Blocks
HCO-2424	24 x **24** x 6			
HCO-2424-1			1	1
HCO-2424-2	(61 x 61 x 15 cm)		2	2
HCO-2424-3		1	1	2
HCO-2424-4		1	2	3
HCO-2436	24 x **36** x 6			
HCO-2436-1			1	1
HCO-2436-2	(61 x 91 x 15 cm)		2	2
HCO-2436-3		1	1	2
HCO-2436-4		1	2	3

*HCO-24xx-**x** models with interior electrical options have an accessories package installed that includes a switched receptacle, 1-1/2 inch wire duct, and a spare parts kit (two replacement fuse bulbs, five replacement 2-pin jumpers, and six 249 ohm resistors). (The resistors can be used for converting a 4–20 mA input into a voltage that KMC controllers can read.) BACnet or KMDigital controllers are **not** included.

Enclosure Accessories

HCO-1020A	Replacement lock and keys for HCO-1034/ 1035/1036/1037/2424/ 2436 panels	
HPO-1315	KMC label, 4 x 8", durable, polycarbonate material	
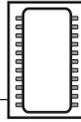
Hardware, Miscellaneous

Ferrite Core

HPO-6001   Replacement cable
ferrite core
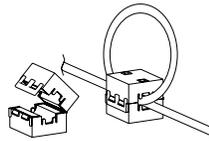
Jumper (Power, EOL, and Output Override)

HPO-0063   Replacement two-pin
jumper

Reducer Bushing and Non-Rotational Bracket

HFO-0011   Reducer bushing, 1/2"
to 3/8" shaft adapter for
BAC/KMD-7000 series
controller-actuators

HMO-4531   Replacement non-
rotational bracket (one
included with BAC/
KMD-7000 series
controller-actuators)

Resistor (249 Ohm) Pack

HPO-0069   249 ohm resistors (pack
of 100) for converting
4-20 mA signals into
1-5 VDC signals for
controller inputs without
built-in conversion
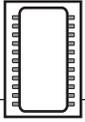
SSS-1000 Series Differential Pressure Flow Sensors

The differential pressure read between the high "H" port and the low "L" port can be used by the BAC/KMD-7000 series to determine the air flow. Connections are 1/4" (6 mm) nipples for 3/8" (10 mm) OD polyethylene tubing. For the BAC/KMD-7000 series, use the HFO-0108 3/8" barb to 1/4" barb adapter.

NOTE: For maximum measurement accuracy, install the longest sensor that will fit into the duct.

SSS-1002	3-5/32 inches long, one set sensing points
SSS-1003	5-13/32 inches long, two sets sensing points
SSS-1004	7-21/32 inches long, three sets sensing points
SSS-1005	9-29/32 inches long, four sets sensing points
HFO-0108	3/8" barb to 1/4" barb union adapter

Snap Track

HMO-4524	3-1/4 x 8-1/2" Snap Track

Terminal Blocks, Removable

902-602-04	3-pin block
031-602-02	4-pin block
902-602-06	5-pin block
883-602-17	6-pin block
883-602-23	7-pin block
902-602-08	8-pin block
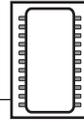
Interfaces and Converters

KMD-5540 Series
CommTalk Protocol Interfaces

(*KMDigital Only*)

The KMC CommTalk Protocol Interface provides a standard equipment interface between KMC networks and third-party equipment interfaces. Depending on the model, some CommTalk Protocol devices respond to the third-party device as if it were communicating with a KMD-7000 series direct digital controller. Others perform as a data translator between the third-party interface and a KMD-5210 LAN Controller. The KMD-5540 features output configurations to meet popular standard equipment interfaces and simple installation and setup.

Models

KMD-5540-001	Carrier DataPort interface
KMD-5540-002	Carrier DataLink interface
KMD-5540-003	York Talk XL interface
KMD-5540-004	McQuay MicroTech OPM (Open Protocol Master) interface
KMD-5540-005	ModBus interface

Specifications

Supply Voltage	24 VAC (–15/+20%) Class 2
Input Power	10 VA Maximum
Baud Rate	9,600 to 38,400
Communications	(2) EIA-485 and (2) EIA-232 with removable terminal blocks for 14–22 AWG
Auxiliary Communications	
	(2) EIA-485 with modular connectors for PC connection or for KMD-1001 NetView
Communications Wiring	
	Belden 82760 or equivalent, 18 AWG twisted, shielded, 5.5 ohms/1000 ft., and ≤ 51 pf/ft. EIA-485: Maximum 4000 ft. without repeater EIA-232: Maximum 50 ft. without repeater
Size	6.8 x 4.34 x 1.4 inches (172.7 x 110.2 x 35.6 mm)
Weight	8.7 oz. (247 grams)
Ambient Limits	
• Operating	0 to 120° F (–18 to 49° C)
• Shipping	–40 to 140° F (–40 to 60° C)
• Humidity	0 to 95% RH, non-condensing

Accessories

902-602-04	Replacement 3-pin removable terminal block
902-602-06	Replacement 5-pin removable terminal block
HPO-0054	Replacement fuse bulb
HPO-0063	Replacement jumper
KMD-5614	Replacement 7-foot long, **4**-conductor, modular plug both ends
KMD-5615	Replacement 7-foot long, **6**-conductor, modular plug both ends
KMD-5625-**1***	Replacement female modular jack to 25-pin male serial D-sub connector
KMD-5628-**1***	Replacement female modular jack to 9-pin female serial D-sub connector, six-conductor

*NOTE: The KMD-5625-**1** and the older KMD-5625 look similar, but they are wired differently and are not interchangeable. The KMD-5628-**1** and the older KMD-5628 also look similar, but they are wired differently and are not interchangeable. The KMD-5540 series interfaces use the KMD-5625-**1** and the KMD-5628-**1**.
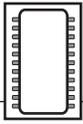
KMD-5550/5556

(KMDigital Only)

Modem Interfaces

KMD-5550/5556 modem interfaces provide the communication link between **obsolete KMD-5501/5502/5504/5505** controllers or subnetworks with a modem to a compatible personal computer. They operate by converting EIA-485 signals from KMC equipment into the EIA-232 signals common to computer modem equipment and PC compatible computers. They operate with any Hayes™ compatible modem.

They are designed to be used with a standard modem configuration set to specific KMC parameters. They feature user-selectable baud rates (1200, 2400, 4800, 9600, or 19,200 baud) and ship with cables and connectors.

NOTE: These are for direct replacements in existing installations using operating systems through Windows 98. For new installations, use a KMD-5559 series CommTalk.

Specifications

Supply Voltage	5 volts DC from KMD-5500 series controller
Input Power	42 mA
Material	Light almond plastic
Weight	7 ounces (198 grams)
Dimensions	2.25 x 2.75 x 1.25 inches (57 x 70 x 32 mm)
Ambient Limits	
• Operating	0 to 120° F (–18 to 49° C)
• Shipping	–40 to 140° F (–40 to 60° C)
• Humidity	0 to 95% RH, non-condensing

Models

KMD-5550	Modem (no dial-out)
KMD-5556	Modem with telephone dial-out capability to local controllers

Accessories

KMD-5614	Replacement 7-foot long, 4-conductor, modular plug both ends (for controller connection)
KMD-5615	Replacement 7-foot long, 6-conductor, modular plug both ends (for modem connection)
KMD-5625*	Replacement female modular jack to 25-pin male serial D-sub connector adapter

*NOTE: The KMD-5625-**1** and the older KMD-5625 look similar, but they are wired differently and are not interchangeable. The KMD-5550/5556 uses the **KMD-5625**.

KMD-5557

(KMDigital Only)

Computer Interface (EIA-485 to EIA-232 Converter)

The KMD-5557 Computer Interface provides the communication link between KMD-5500/5800/6000/7000 series controllers or subnetworks and an IBM™ compatible personal computer. **This product is NOT certified to operate with Windows 2000, XP, or Vista.** For Windows 2000 and later, use the KMD-5576 USB to EIA-485 Communicator.

The KMD-5557 is optically isolated to prevent signal interference and converts the EIA-485 signal used by the controller to an EIA-232 signal used by the PC. The KMD-5557 is designed specifically to provide a communications interface between the EIA-485 signal used by KMD-5500/5800/6000/7000 series controllers, or subnetworks attached to these controllers, and a compatible PC.

NOTE: The **KMD-5558** is a similar interface for the obsolete KMD-5652 pocket computer.

Specifications

Supply Voltage	5 volts DC from KMD-5500 controller or PC
Input Power	
• Controller	26 mA
• PC	7 mA
Material	Beige plastic
Weight	7 ounces (198 grams)
Dimensions	2.25 x 2.75 inches (50 x 70 mm)
Ambient Limits	
• Operating	0 to 120° F (–18 to 49° C)
• Shipping	–40 to 140° F (–40 to 60° C)
• Humidity	0 to 95% RH, non-condensing

Accessories

KMD-5614	Replacement 7-foot long, 4-conductor, modular plug both ends (for controller connection)
KMD-5615	Replacement 7-foot long, 6-conductor, modular plug both ends (for computer connection)
KMD-5628*	Replacement female modular jack to 9-pin female serial D-sub connector adapter

*NOTE: The KMD-5628-**1** and the older KMD-5628 look similar, but they are wired differently and are not interchangeable. The KMD-5557 uses the **KMD-5628**.
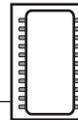
KMD-5559 Series

(*KMDigital Only*)

CommTalk Communications Interfaces

The KMD-5559 CommTalk is a microprocessor-based, programmable, communications interface module. The CommTalk manages all communications between the KMC Digital Tier 2 network and an external reporting service such as a modem-to-modem/PC, modem-to-pager service, or a PC.

The CommTalk can be programmed to initiate a modem-to-modem/PC connection. The CommTalk will send any alarms and manage any request from a PC before terminating the modem-to-modem/PC connection.

The CommTalk may also be programmed to initate a modem-to-pager service connection. The CommTalk will deliver the appropriate access codes to the pager service and send a text or numeric message as programmed. The pager number, access codes, and messages are programmed in the KMC Digital controllers.

Models

KMD-5559	19.2K Baud Modem/PC, supplied with the HPO-0068 transformer
KMD-5559E	Supplied with**out** HPO-0068 (for 240 volt AC mains, use Stancor STAF-2098F or equivalent)
KMD-5559-2	9.6K Baud Modem/PC, supplied with HPO-0068
KMD-5559-2E	Supplied with**out** HPO-0068 (for 240 volt AC mains, use Stancor STAF-2098F or equivalent)

Specifications

Installation
- Supply Voltage   9 to 24 volts AC or DC supplied by the HPO-0068 (requires 2.1 x 5.5 mm barrel plug)
- Dimensions   5.38 x 3.38 x 1.32 inches (137 x 86 x 34 mm)
- Weight   8.7 oz (247 grams)

KMD-5559 and KMD-5559E Baud Rates
- CommTalk to Controller   Auto (9600 to 38400)
- CommTalk to PC or modem 19.2K (fixed)

KMD-5559-2 and KMD-5559-2E Baud Rates
- CommTalk to Controller   Auto (9600 to 38400)
- CommTalk to PC or modem 9.6K (fixed)

Regulatory   UL 916 Energy Management Equipment listed CE compliant

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0–95% RH, non-condensing

Accessories

KMD-5628-**1***	Replacement female modular jack to 9-pin female D-sub connector PC adapter
KMD-5625-**1***	Replacement female modular jack to 25-pin male D-sub connector modem adapter
KMD-5614	Replacement four-wire flat cable with male modular connectors for CommTalk to KMD digital controller
KMD-5615	Replacement six-wire flat cable with male modular connectors for CommTalk to modem
HPO-0068	Replacement required power supply
KMD-5569	56K baud external modem

*NOTE: The KMD-5625-**1** and the older KMD-5625 look similar but are not interchangeable. The KMD-5628-**1** and the older KMD-5628 also look similar are not interchangeable. The KMD-5540 series interfaces use the KMD-5625-**1** and the KMD-5628-**1**.

KMD-5569

56K Faxmodem

The KMD-5569 is a modem approved for dial-up applications with the following KMC Controls products:
- BAC-5000 BACstage
- BAC-5050 FullBAC Router
- KMD-5205 LANLite
- KMD-5210 (all models) LAN Controller
- KMD-5270 (all models) WebLite
- KMD-5696 CommTalk
- KMD-5791 WinControl XL Plus

Capable of receiving at up to 56 kbps and sending at up to 48 kbps (or 31.2 kbps with V.90 server). (Due to FCC regulations, receiving speeds are limited to 53 kbps; actual speeds may vary.)

Specifications and Standards

Modem standards and protocols supported:
- V.92 56 kbps ITU standard (features require compatible phone line)
- V.90 56 kbps ITU standard (features require compatible phone line)
- V.34 33.6 kbps ITU standard

Compatible with ITU and Bell standards from:
- 56 kbps to 1200 bps
- V.42/MNP 2-4 error control, V.42 bis/MNP 5 data compression
- Fax: Class 1 and 2.0 Group III 14.4 Kbps send and receive

Requirements:
- Computer with Windows 2000 or XP for operations with BACstage or WinControl
- Dedicated 56K compatible local analog telephone line
- Serial cable (KMD-5674 not included)

Accessories

KMD-5674	Serial cable for KMD-5205 and KMD-5270
KMD-5625-1*	Modular connector to 25-pin D-sub serial adapter for KMD-5559 ComTalk (included with CommTalk)
KMD-5615	**Six**-wire flat cable with male modular connectors for KMD-5559 CommTalk to modem (included with CommTalk)

*NOTE: The KMD-5625-**1** and the older KMD-5625 look similar but are not interchangeable.
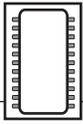
KMD-5576

USB to EIA-485 Communicator

The USB (Universal Serial Bus) port is replacing the once common EIA-232 serial port that is now part of a legacy removal program in the computer industry. To replace the serial port as a network connection method, KMC Controls developed the KMD-5576 USB Communicator. The KMD-5576 is a USB to EIA-485 converter that directly connects a computer USB port to a KMC Tier 2 digital network by plugging into a controller or a NetSensor data port. Converter is shipped with cables and certified drivers.

Specifications	
USB Compliance	USB 2.0
Optical Isolation	Up to 2.5 kilovolts between the ports
Operating System	Windows 2000, XP, and Vista (**not** compatible with earlier versions that do not support USB)
Power Supply	No external power source is required; it draws power from the USB port and Tier 2 device
Indicators	Green, USB transmit and receive LEDs
Construction	Black plastic

Accessories	
KMD-5624	Replacement cable, USB Communicator to NetSensor
KMD-5614	Replacement cable, 7-foot long, 4-conductor, modular plug both ends

KMD-5696/5698/5699

Flash Upgrade Kit

This kit enables upgrading firmware in KMDigital and BACnet controllers and the BAC-5050 router (or the BAC-10000 series FlexStat with the KMD-5699). It includes:

- Interface and ribbon cable for BAC/KMD-5200/5800 series controllers and BAC-5050 router and interface/cable for BAC/KMD-7000 series controllers (OR interface/cables for the BAC-10000 series FlexStat)
- Computer interface cable (parallel in KMD-5696, USB in KMD-5698/5699)
- CD with flash program

NOTE: The latest controller firmware is available from the download section of KMC Control's web site.

Models	
KMD-5696	Parallel port, flash upgrade kit
KMD-5698	USB port, flash upgrade kit
KMD-5699	USB port, flash upgrade kit for FlexStat

Accessories	
KMD-5697	Flash wizard (not for KMD-5699)

KMD-5697

Flash Wizard

The Flash Wizard program helps automate the use of the flash program (contained on the KMD-5696/5698 CD) to update firmware in controllers. This CD also contains firmware for KMC controllers.

NOTE: Requires a KMD-5696/5698 flash upgrade kit to upgrade controller firmware. The latest controller firmware is available from the download section of KMC Control's web site. The KMD-5697 is not used with the KMD-5699.

Accessories	
KMD-5696	Parallel port, flash upgrade kit
KMD-5698	USB port, flash upgrade kit
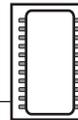
Output Override Boards

HPO-6700 Series
Output Override Boards

HPO-6702 (*0–10 VDC***)**
HPO-6704 (*4–20 mA***)**

HPO-6701
(*Triac***)**

HPO-6703 (*NO Relay***)**
HPO-6705 (*NC Relay***)**

For enhanced output options and for devices that cannot be conveniently powered directly from a standard controller universal output, install a relevant HPO-6700 series output override board (in supporting controller models only).

The **HPO-6701/6703/6705** boards are designed to convert a digital output to a relay contact or triac output and to provide "Hand-Off-Auto" and feedback functions. The **HPO-6704** converts a standard 0–10 VDC output to a 4–20 mA output. The **HPO-6702/6704** enhance the respective analog output with "Hand-Off-Auto" and feedback functions while providing an adjustable potentiometer for override settings while in the "Hand" position.

Each output board (except HPO-670x-1) has an accessible three-position slide switch for selecting the "Hand-Off-Auto" functions. While in the "Hand" position, the output is manually energized, and the controller is provided with a feedback signal to indicate the output has been overridden. While in the "Off" position, the output is manually de-energized, and the controller is provided with a feedback signal to indicate the output has been overridden. While in the "Auto" position, the output is under the command of the controller. Each output board also has a red LED to indicate when the output is turned On either manually or automatically.

Models and Specifications

Triac (AC)*

HPO-6701	Triac: zero-cross switching, optical isolation, 12 VAC min. and 30 VAC max. voltage, 20 mA min. current and max. current = 1 A for 1 board (0.8 A max. for 2 boards, 0.6 A for 3–4 boards, and 0.5 A for 5–8 boards)

Analog (DC Voltage or Current) Outputs

HPO-6702	0–10 VDC analog: short protection, 100 mA max., adjustable override pot.
HPO-6704	4–20 mA current loop: short protection, 100 ohm min. and 500 ohm max., adjustable override pot. (since the HPO-6704 supplies the power, it will not work with a 4–20 mA device that also supplies its own power)

Relays (AC or DC)*

HPO-6703	Normally open relay: 30 VAC/VDC, 2 A max.
HPO-6705	Normally closed relay: 30 VAC/VDC, 2 A max.

*NOTE	With the HPO-6701 triac and HPO-6703/6705 relays, use only the Switched Common terminal (in the same output bank as the output terminal) on the controller instead of Ground for the signal common.
NOTE	For more details, see the data sheet.
NOTE:	Only the HPO-6701 and HPO-6704 are approved for smoke control applications.

Accessories

HPO-6802	Output override boards raised cover (see below—required when using in the specified models of controllers).

Output Override Board and Controller Accessories

The following accessory/repair parts are available for controllers or expansion modules with **metal and older "side-mounting" plastic cases** (e.g., BAC-A1616BC, CAN-A168EIO, BAC/KMD-5831, KMD-5205, KMD-5221/KMD-5270). They are not applicable to current model controllers with raised plastic cases (e.g., BAC/KMD-5801/5802).

Models

HPO-6802	Output board raised cover with labels—required to secure the boards in "metal-case" controllers
883-319-01	Replacement rack insert for controllers
902-305-02	Replacement flat cover

Power Supplies and Transformers

Power Supplies

KMD-5621   Plug-in 6 VDC power supply for KMD-5620

KMD-5563   5/±15 VDC power supply with 5-pin DIN connector for KMD-5210 series and BAC-5050

HPO-0068   Plug-in power supply for KMD-1002 and KMD-5559

Transformers

NOTE: See SP-071 **KMC Controls Condensed Catalog (Electronic and Pneumatic Controls)** or the XEE-6000 Series Transformers data sheet for more details and selection criteria for transformers.

XEE-6111-40   Transformer, 120-to-24 VAC, 40 VA, single hub
XEE-6112-40   Transformer, 120-to-24 VAC, 40 VA, dual hub
XEE-6111-100   Transformer, 120-to-24 VAC, 100 VA, single hub
XEE-6112-100   Transformer, 120-to-24 VAC, 100 VA, dual hub
XEE-6111-050   Transformer, 120-to-24 VAC, 50 VA, single hub
XEE-6112-050   Transformer, 120-to-24 VAC, 50 VA, dual hub
XEE-6211-050   Transformer, 277-to-24 VAC, 50 VA, single hub
XEE-6212-050   Transformer, 277-to-24 VAC, 50 VA, dual hub
XEE-6311-050   Transformer, 120/240/277/480-to-24 VAC, 50 VA, dual hub*
XEE-6111-075   Transformer, 120-to-24 VAC, 75 VA, single hub*
XEE-6112-075   Transformer, 120-to-24 VAC, 75 VA, dual hub*
XEE-6311-075   Transformer, 120/208/240/480-to-24 VAC, 75 VA, single hub*
XEE-6111-100   Transformer, 120-to-24 VAC, 100 VA, single hub*
XEE-6112-100   Transformer, 120-to-24 VAC, 100 VA, dual hub*
XEE-6311-100   Transformer, 120/240/277/480-to-24 VAC, 100 VA, dual hub*
(* = includes a built-in circuit breaker)
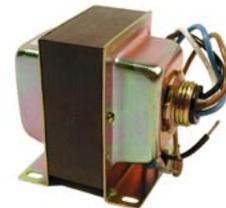
Single Hub XEE-6111 Shown
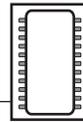
Signal Repeater and Circuit Isolation/Protection

Fuses and Fuse Bulb

909-600-01   Fuse, 125 mA, fast
                 acting, 5 x 20 mm

902-600-04   Fuse, 1 A, fast
                 acting, 5 x 20 mm
                 (same as HPO-0053)
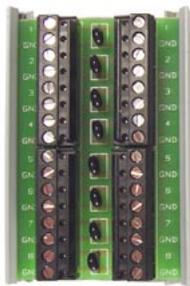
902-600-05   Fuse, 1.6 A, fast
                 acting, 5 x 20 mm

HPO-0054   Fuse bulb for network
                 connection protection/
                 isolation

HCO-0070/0071
Input/Output Transient Suppressor Boards

**HPO-0071
Shown**

The HPO-0071 is an eight-circuit transient suppressor board used on the inputs of digital controllers, and the twelve-circuit HPO-0070 is used on the outputs. (If such a controller has more than eight inputs, an additional HPO-0071 will be needed.) When properly installed and wired, these board can protect the digital controllers from high-voltage transients. (These boards are required on every controller involved in smoke control applications.)

Specifications	
Mounting	Snap Track
Dimensions	2⅛" x 5⁄8" x (3¼" for HPO-0071 or 4¹³⁄₁₆" for HPO-0070) unmounted; 2⅜" x 1" x (3⁷⁄₁₆" or 5¼") mounted in Snap Track
Technology	Transorbs
Max. Peak Current	250 A, 1 time (@ 8/20 μs); 125 A, 2 times (@ 8/20 μs)
Voltage	18 Volts
Clamping Voltage	40 Volts @ 8/20 μs
Ambient Limits	
• Operating	–40° to 185° F (–40° to 85° C)
• Shipping	–40° to 185° F (–40° to 85° C)
• Humidity	0 to 95% RH, non-condensing
Regulatory	UL 864 Smoke Control Equipment listed (UUKL) UL 916 Energy Management Equipment listed

Models	
HPO-0070	Twelve-output transient suppressor board
HPO-0071	Eight-input transient suppressor board

Accessories	
902-602-08	Replacement terminal block, eight-pin
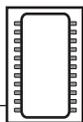
KMD-5567

Network Surge Suppressor Module and Connector

The KMD-5567 provides surge suppression for one or two pairs of low-voltage data signal lines with three-stage hybrid technology. The KMD-5567 addresses overvoltage transients with gas tubes and silicon avalanche components. In addition, sneak and fault currents are mitigated with resettable (Positive Temperature Coefficient) fuses. The PTCs increase resistance several orders of magnitude when over-current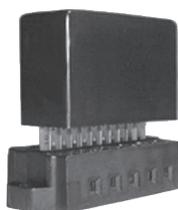s exceed safe levels. A normal state resumes when over-currents are removed. The ability to self-restore in this manner significantly increases suppressor performance and survivability. The KMD-5567 is a two part unit consisting of the HPO-0066 suppressor module and the HPO-0067 terminal connector.

When properly installed and wired, the KMD-5567 can help protect the digital communication circuitry from lightning damage. The KMD-5567 is installed at building exits and entrances to provide surge suppression for one or two pairs of data signal lines. In smoke control applications, one KMD-5567 is also required for the EIA-485 terminals of every controller and repeater as well.

Specifications

Peak Surge Current	8 x 20 µs 10 kA; 10 x 700 µs 500 A per line
Life Expectancy	8 x 20 µs (2000 A) 100 occurrences, 10 x 700 µs (400 A) 100 occurrences
Response Time	< 1 nanosecond
Voltage Clamp	15 volts
Technology	SAD hybrid
Resistance	8.0 ohms per line
Capacitance	1500 pf (average)
Weight	2.0 oz. (56.7 g)
Regulatory	UL 497B Isolated Loop Circuit Protectors listed
Ambient Limits	
• Operating	–40 to 185°F (–40 to 85° C)
• Shipping	–40 to 185°F (–40 to 85° C)
• Humidity	0 to 95% RH, non-condensing

Accessories

HPO-0066	Suppressor module (top)
HPO-0067	Suppressor terminal connector (bottom)

KMD-5575

Network Repeater-Isolator

The KMD-5575 Network Repeater-Isolator extends and reconditions EIA-485 network communications as well as enabling "T" or branch networks.

The KMD-5575 is designed to recondition a degraded EIA-485 communication signal on a KMDigital or BACnet subnetwork. Two primary factors that cause communication signal degradation within the digital subnetwork are long subnetwork wiring lengths and the number of digital controllers connected to the subnetwork.

A KMD-5575 is required after every 31 consecutive controllers on KMDigital or BACnet subnetworks (e.g., between controllers 31 and 32) or if the cumulative wiring distance exceeds 4,000 feet. (For smoke control applications, the maximum total length of the EIA-485 network cable, including all repeaters, is 4,000 feet.) In addition, the KMD-5575 is required for "T" or branch network wiring configurations.

Optical isolation between subnetwork segments helps prevent ground loops or current between segments as well as creating a 1,500 volt barrier to protect other connected segments from subnetwork overvoltage. Double electrical isolation prevents overvoltage or mis-phasing of the power connection from affecting the subnetwork. Surge protection protects the subnetwork from voltage spikes and accidental miswiring. Crash avoidance helps prevent the token from crashing during network problems.

Specifications

Supply Voltage	24 VAC (–15%/+20%), 60 Hz, 3 VA, Class 2
Baud Rate	9,600 to 38,400
Connections	Removable screw terminal blocks, wire size 14–22 AWG
Wiring	Belden 82760, or equivalent, 18 AWG twisted shielded, 5.5 Ω/1000 ft. and ≤ 51 pf/ft.
Material	Black plastic
Size	5.31 x. 3.38 inches (134.9 x 85.8 mm)
Weight	2.5 oz. (71 grams)
Regulatory	UL 916 Energy Management Equipment listed; UL 864 Smoke Control Equipment listed (UUKL)
Ambient Limits	
• Operating	0 to 120° F (–18 to 49° C)
• Shipping	–40 to 140° F (–40 to 60° C)
• Humidity	0 to 95% RH, non-condensing

Accessories

902-602-04	Replacement three-pin removable terminal block
031-602-02	Replacement four-pin removable terminal block
HPO-0063	Replacement two-pin jumper
HCO-1102	Steel control enclosure, 10.1 x 2.4 x 7.1 inches (257 x 62 x 181 mm)
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6112-100	Transformer, 120-to-24 VAC, 96 VA, dual-hub (required in smoke control applications)
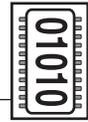
BACnet Controllers and Hardware
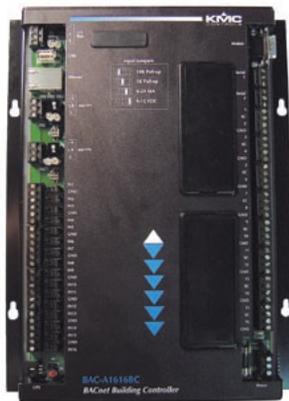
Advanced Application Controllers

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-1160/1180 series 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 (see the **Output Override Boards** section)
902-602-04	Replacement three-pin removable terminal block
031-602-02	Replacement four-pin removable terminal block
883-602-17	Replacement six-pin removable terminal block
902-600-04	Replacement fuse, 1 A, fast acting, 5 x 20 mm
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)
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub

SEE ALSO: The *NetSensors* section, *Output Override Boards* section, and the *Accessories, Controller* section.

Features and Specifications

Inputs
- 8 universal inputs, each of which is programmable as an analog, binary, or accumulator object (accumulators limited to three per 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
- 8 universal outputs, each of which is programmable as an analog or binary object
- Standard and custom units of measure
- Slots for HPO-6700 series output override boards
- Removable screw terminal block, wire size 14–22 AWG
- 0–10 volts DC for analog objects
- 0/12 volts DC for binary objects
- Short-protected outputs, output current limited to 100 mA per output (or 350 mA total)

Other features
- 10 Control Basic program areas
- See PIC statement for supported objects (value, PID loop, schedule, calendar, notification class, trend)
- 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 connector

Installation
- Supply voltage   24 volts AC (–15%, +20%), 36 VA, Class 2
- Weight   14 ounces (395 g)
- Case material   Black flame-retardant plastic

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% relative humidity (non-condensing)

Regulatory
- BACnet Testing Laboratory listed
- CE compliant
- FCC Class B, Part 15, Subpart B
- UL 916 Energy Management Equipment listed
- UL 864 Smoke Control Equipment listed (UUKL)

BAC-5831

Advanced Application Controller, 16 x 12
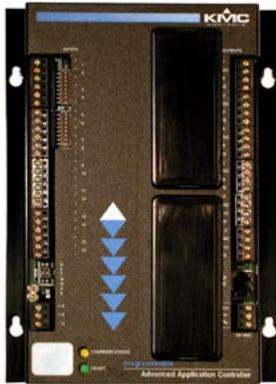
The BAC-5831 native BACnet, fully programmable, direct digital controllers are versatile general purpose controllers in stand-alone environments or networked to other BACnet devices. As part of a complete building automation system, they provide precise monitoring and control of connected points, such 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-1160/1180 series NetSensors.

Accessories

883-319-01	Replacement board guide rack insert
902-305-02	Replacement flat cover
902-602-04	Replacement three-pin removable terminal block
031-602-02	Replacement four-pin removable terminal block
883-602-17	Replacement six-pin removable terminal block
902-600-05	Replacement fuse, 1.6 A, fast acting, 5 x 20 mm
HCO-1034	Steel control panel enclosure, 16 W x 18 H x 6" D
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-6700 series	Output override boards (see the **Output Override Boards** section)
HPO-6802	Output override board raised cover (required when using any of the above boards)
HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub

Features and Specifications

Inputs
- 16 universal inputs, each of which is programmable as an analog, binary, or accumulator object (accumulators limited to three per 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
- Compatible with KMD-1160/1180 series NetSensors

Outputs
- 12 universal outputs, each of which is programmable as an analog or binary object
- Standard and custom units of measure
- Slots for HPO-6700 series output override boards
- Removable screw terminal block, wire size 14–22 AWG
- 0–10 volts DC for analog objects
- 0/12 volts DC for binary objects
- Short-protected outputs, output current limited to 100 mA per output (or 450 mA total)

Other features
- 10 Control Basic program areas
- See PIC statement for supported objects (value, PID loop, schedule, calendar, notification class, trend)
- Programs and program parameters are stored in nonvolatile memory
- Real-time clock with power backup for 72 hours
- Auto restart on power failure
- EIA-485 operating up to 76.8 kilobaud
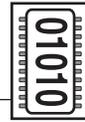- NetSensor compatible with connection through modular connector

Installation
- Supply voltage   24 volts AC (–15%, +20%), 36 VA, Class 2
- Weight   16 ounces (454 g)
- Case material   Black powder-coated steel

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% relative humidity (non-condensing)

Regulatory
- BACnet Testing Laboratory listed
- CE compliant
- FCC Class B, Part 15, Subpart B
- UL 916 Energy Management Equipment listed
- UL 864 Smoke Control Equipment listed (UUKL)

BAC-7000 Series

Advanced Application Controller (and Actuator), VAV (4 x 4)

The BAC-7000 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

SSS-1002	Air flow sensor, 3-5/32 inches long
SSS-1003	Air flow sensor, 5-13/32 inches long
SSS-1004	Air flow sensor, 7-21/32 inches long
SSS-1005	Air flow sensor, 9-29/32 inches long
HFO-0108	3/8" barb to 1/4" barb union adapter
HFO-0011	Reducer bushing, 1/2" to 3/8" shaft adapter
HMO-4531	Replacement non-rotational bracket
902-602-04	Replacement three-pin removable terminal block
902-602-06	Replacement five-pin removable terminal block
883-602-23	Replacement seven-pin removable terminal block
902-602-08	Replacement eight-pin removable terminal block
HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub

Features and Specifications

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
• Short-protected outputs, 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
• 10 Control Basic program areas
• See PIC statement for supported objects
• Programs and program parameters are stored in nonvolatile memory
• Auto restart on power failure
• EIA-485 operating up to 76.8 kilobaud
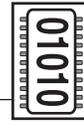• NetSensor compatible with connection through modular jack

Installation
• Supply voltage	24 volts AC (–15%, +20%), 25 VA, Class 2
• Dimensions	8.2 x 4.2 x 2.3" (209 x 107 x 57 mm)
• Weight	2.4 lbs (1.1 kg)
• Case material	Black flame-retardant plastic

Environmental limits
• Operating	32 to 120° F (0 to 49° C)
• Shipping	–40 to 140° F (–40 to 60° C)
• Humidity	0 to 95% relative humidity (non-condensing)

Regulatory
• BACnet Testing Laboratory listed
• CE compliant
• FCC Class B, Part 15, Subpart B
• UL 916 Energy Management Equipment listed

BAC-7300/7400 Series
Advanced Application Controllers, 4 x 4

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 BACnet controller without real-time clock
*BAC-7301C	AHU BACnet controller with real-time clock
*BAC-7302	RTU BACnet controller without real-time clock
*BAC-7302C	RTU BACnet controller with real-time clock
BAC-7303	FCU BACnet controller without real-time clock
BAC-7303C	FCU BACnet controller with real-time clock
*BAC-7402	HPU BACnet controller without real-time clock
*BAC-7402C	HPU BACnet controller with real-time clock

Accessories

902-602-04	Replacement three-pin removable terminal block
902-602-06	Replacement five-pin removable terminal block
883-602-17	Replacement six-pin removable terminal block
883-602-23	Replacement seven-pin removable terminal block
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-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub

Features and Specifications

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
- Short-protected outputs, 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
- See PIC statement for supported objects
- 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   Black flame-retardant plastic

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% relative humidity (non-condensing)

Regulatory
- BACnet Testing Laboratory listed
- UL 916 Energy Management Equipment listed
- FCC Class B (Class A for BAC-7303/7303C), Part 15, Subpart B
- *CE compliant (except for BAC-7303/7303C)

Building Controller and Router

BAC-A1616BC
BACnet Building Controller, 16 x 16

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:

- Web server allows a remote web browser to configure I/Os, set-up objects, and monitor values (configuration/monitoring also available through TotalControl)

- Firmware upgradable (without requiring physical access) through the web or Ethernet connection, allowing easy updates using nothing more than a web browser

- Up to 7 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)

Options and Accessories

BAC-ABC-Email	Email server upgrade
BAC-ABCWEB	Graphics page upgrade
CAN-A168EIO	I/O Expansion Module (see the next page)
HPO-6700 series	Output override boards (see the **Output Override Boards** section)
883-319-01	Replacement board guide rack insert
902-305-02	Replacement flat cover
902-602-04	Replacement 3-pin removable terminal block
031-602-02	Replacement 4-pin removable terminal block
883-602-17	Replacement 6-pin removable terminal block
902-600-05	Replacement fuse, 1.6 A, fast acting, 5 x 20 mm
HPO-0054	Replacement fuse bulb
HPO-0063	Replacement two-pin jumper
XEE-6000 series	Transformers

Features and Specifications

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
- Each short-circuit protected output capable of driving up to 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
- Built-in router and web 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
- See PIC statement for supported objects (value, multi-state value, PID loop, schedule, calendar, notification class, trend)

|	
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	Black powder-coated steel
Regulatory	CE Compliant UL 916 Energy Management Equipment listed FCC Class B, Part 15, Subpart B BACnet Testing Laboratory listed (pending)

Environmental Limits

Operating Temp.	32 to 140° F (0 to 60° C)
Shipping Temp.	–40 to 160° F (–40 to 71° C)
Humidity	0 to 95% RH, non-condensing

Models

BAC-A1616BC	BACnet Building Controller
BAC-A1616BC-Email	B-BC w/ email server
BAC-A1616BC-Web	B-BC w/ graphics pages
BAC-A1616BC-Web-Email	B-BC w/ email server and graphics pages

CAN-A168EIO

I/O Expansion Module, 16 x 8

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

- 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

Specifications

Dimensions	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)
Weight	1.6 lb. (0.7 kg)
Supply Voltage	24 volts AC (–15%, +20%), 25 VA, Class 2
Case Material	Black powder-coated steel

Regulatory
- CE Compliant
- UL 916 Energy Management Equipment listed FCC Class B, Part 15, Subpart B
- BACnet Testing Laboratory listed (pending)

Environmental Limits
- Operating Temp.   32 to 140° F (0 to 60° C)
- Shipping Temp.   –40 to 160° F (–40 to 71° C)
- Humidity   0 to 95% RH, non-condensing

Accessories

See the BAC-A1616BC.

BAC-5050

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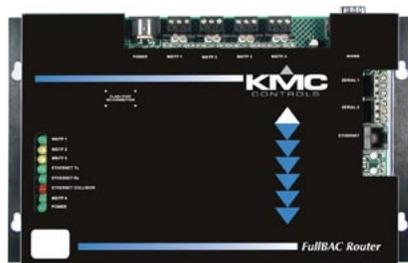
The BAC-5050 is a multi-port BACnet router for routing building automation data between BACnet/IP, BACnet Ethernet, and MS/TP networks. It supports BACnet IP pad routing and also includes direct serial or modem point-to-point connection. It conforms to ANSI/ ASHRAE Standard 135-2001.

Features and Specifications

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

Memory
- 2 MB nonvolatile flash memory; 2 MB RAM
- Configuration parameters are stored in nonvolatile memory
- RAM automatically backed up to flash memory every 6 hours
- Auto restart on power failure

BACnet RouterTools
- 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)

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
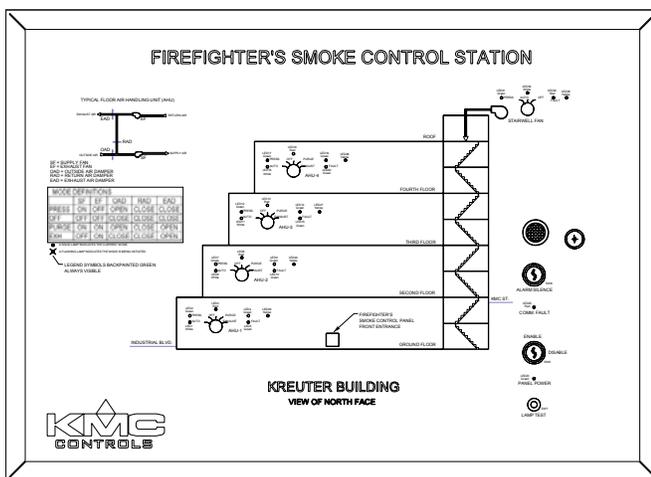- Humidity   0–95% RH (non-condensing)

Regulatory
- CE compliant
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
- BACnet Testing Laboratory listed

Options and Accessories

HCO-1035	Enclosure 20 x 24 x 6 inches (508 x 610 x 152 mm)
HCO-1036	Enclosure 24 x 36 x 6 inches (610 x 914 x 152 mm)
902-602-04	Replacement 3-pin removable terminal block
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

Energy and Smoke Management

BACnet Smoke Control System (UUKL): Firefighters' Smoke Control Station

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.
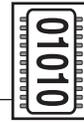
BACnet Controller Models (UL 864 Listed)

BAC-5801	BACnet controller with real-time clock
BAC-5802	BACnet controller without real-time clock
BAC-5831	BACnet 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.

H8163 Series
Energy Meters

These energy meters combine highly accurate industrial-grade **split-core current transducers (CTs)** and precision microprocessor-based **metering electronics in a single package** for exceptional metering accuracy and reduced metering system installed cost.

The unique design and installer-friendly features of the energy meter greatly reduce the time and overall cost of installing an energy metering system. Split-core CTs with color-coded leads install very quickly, clamping directly to the electrical conductor and eliminating the need for mounting brackets. For excellent total system accuracies of 1% (from 2 to 100% of the CT current rating, e.g., 2 to 100 A with 100 A CTs), each meter is factory-matched and calibrated with quickly installed split-core CTs.

The meter automatically detects and compensates for phase reversal, eliminating CT load orientation concerns. The meter provides an extended input voltage range (120 to 480 VAC, auto-ranging), a pulse output for control systems, and a phase-loss alarm output for equipment protection.

As a stand-alone unit, the high-resolution **backlit LCD display** allows clear readings under any lighting conditions to reduce the risk of misinterpretation. The backlighting can be disabled if desired. The meter display provides true rms measurement as well as installation diagnostics.

When equipped with an **optional internal BACnet or Modbus communications board**, the energy meter can report (through an EIA-485 connection to a building automation system) up to 26 energy and power variables, including volts, amperes, power factor, kW, kVAR, kVA, and kWh on various lines.

SEE ALSO: *H Series Current Sensors* in the *KMDigital Controllers and Hardware* section.

Specifications

LCD Display	1.2 x 3.8 inch (31 x 97 mm) viewing area, 160 segments, back-lit with green LEDs
Electrical Services	Service in which the phase A-N voltage is ≤ 300 VAC and the phase-to-phase voltage is ≤ 480 VAC nominal with neutral
Insulation Class	600 VAC
Internal Isolation	2,500 VAC
Frequency	50/60 Hz
Sample Rate	1,280 Hz
Temperature Range	
• Storage	–40 to 158° F (–40 to 70° C)
• Operating	32 to 122° F (0 to 50° C)
• Humidity	0 to 95% RH (non-condensing)
Systems Accuracy	±1% of reading (at 2 to 100% of the CT's rated current)
Power Consumption	50 VA
Voltage Tolerance	90 to 300 VAC line-to-neutral
Pulse Output	NO, 100 mA @ 24 VAC/VDC
Pulse Rate	0.10 (not supported at > 1,600 A), 0.25 (not supported at > 2,400 A), 0.50, or 1.00 kWh per pulse
Pulse Width	200 msec. closed
Phase Loss Alarm	NC output, opto-FET, 100 mA @ 24 VAC/VDC; fixed threshold 25% below any other phase, open as long as alarm persists
Protection Class	NEMA 1

Models and Accessories

Amps	One CT	Two CTs	Three CTs
100	H8163-0100-0-1	H8163-0100-0-2	H8163-0100-0-3
200	H8163-0200-1-1	H8163-0200-1-2	H8163-0200-1-3
300	H8163-0300-2-1	H8163-0300-2-2	H8163-0300-2-3
400		H8163-0400-3-2	H8163-0400-3-3
800		H8163-0800-3-2	H8163-0800-3-3
800			H8163-0800-4-3
1600			H8163-01600-4-3
2400			H8163-2400-4-3
Optional Communication Boards with EIA-485 Connections			
BACnet	H8186-CB		
Modbus	H8163-CB		

Lighting Controls (KMC Lighting)

KMC Lighting L900 Series
MASTER Lighting Control Cabinets

These cabinets provide solutions to lighting applications of all sizes. They can be installed as a single cabinet or easily combined with other cabinets for a complete integrated system.

With eight (in 8-relay cabinet) or twelve (in 24- and 48-relay cabinets) discrete, analog inputs, these cabinets readily connect occupancy sensors, photocells, switches, and a variety of other analog input devices. Flexible networked digital switch models are also available for control from multiple locations. An input card provides an additional 36 discrete, analog inputs in the 24 and 48 relay cabinets.

The master lighting control cabinet is used to configure the entire system. Designed for intuitive programming and operation, lighting cabinets from KMC Controls feature a large keypad and a two-line, sixteen-character LCD screen to facilitate programming of all switching system and ATC (Astronomic Time Clock) parameters.

The integrated ATC automates switching with up to 999 user-defined events and 999 holiday schedules. ATC events may be triggered by time of day or by a time offset from either sunrise or sunset. System location is programmable by specifying your location. ATC automatically adjusts for daylight savings time and leap year where applicable.

Accessories

L200 Series	Lighting control relays
L00LVS Series	Low voltage switches
L80301 Series	Momentary action switches
LZMDSW Series	Digital switches
LOSC15-I0W	Ceiling mount occupancy sensor
LOSWLR-IOW	Wall mount occupancy sensor, long range
LOSWWV-IOW	Wall mount occupancy sensor, wide view
L900 Series	Expansion lighting control cabinets
LRAC00-SIB	Input card, 36 input, for 24 and 48 relay panel
LRAC00-VBR	Voltage barrier (used between groups of 8 relays)

Features and Specifications

- Programmable "blink warn" and user programmable refresh time
- Overrides available at cabinet for controls, time clock, and relays
- Integrated astronomical time clock
- Relays are rated for all light sources as well as motors
- Relays are individually replaceable
- One-pole and two-pole relays fit in the same location
- Normal or Emergency mode cabinet capability
- Cabinet is prewired and tested
- Standard transformer has inputs for 120, 277, or 347 volts AC power
- Cabinets may be surface or recess mounted
- BACnet MS/TP networking on EIA-485 shielded twisted-pair cable
- Switch inputs can be configured as pulled-up to 24 VDC (externally supplied) or pulled-down to common
- Inputs can connect to a variety of switches, occupancy sensors, photocells, and contact closures
- System communications is low-voltage Class 2 (PELV) wiring connecting cabinets to external controls
- Lifetime power failure memory restores lighting to levels prior to power interruption
- User adjustable for either sequential or non-sequential cycling of relays

Dimensions
- L900-R08MD-000 13 x 13 x 4 inches (330 x 330 x 102 mm)
- L900-R24MD-000 20.25 x 34 x 4 inches (514 x 864 x 102 mm)
- L900-R48MD-000 20.25 x 54 x 4 inches (514 x 1372 x 102 mm)

Supply Voltage	120/277/347 VAC, 50/60 Hz, phase to neutral
Construction	NEMA 1 enclosure, IP-20 protection, 16 gauge steel, indoor use only, surface or recess mount

Regulatory
- UL 924, UL, and CUL Listed
- CEC Title 24 Compliant
- ASHRAE 90.1 Compliant

Environmental Limits
- Operating Temp. 32 to 104° F (0 to 40° C)
- Humidity 0 to 95% RH, non-condensing

Models

L900-R08MD-000	Panel, network, 8 relay capacity
L900-R24MD-000	Panel, network, 24 relay capacity
L900-R48MD-000	Panel, network, 48 relay capacity

KMC Lighting L900 Series
EXPANSION Lighting Control Cabinets

KMC Lighting expansion lighting control cabinets are configured and operated from a connected master control panel. The cabinets are offered in sizes from 4 to 48 relays per panel, in a variety of configurations. Features include:
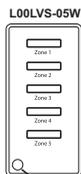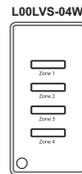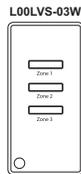
- Up to 96 relays total per network
- Remote programming and configuration from any master lighting cabinet
- Distributed switching applications

Models

L900-RE4SD-104	Expansion panel with 4 single-pole NO relays
L900-RE4SD-204	Expansion panel with 4 double-pole NO relays
L900-R24SD-000	Expansion panel with 24 relay capacity
L900-R48SD-000	Expansion panel with 48 relay capacity

Accessories

(See under L900 Series MASTER Lighting Control Cabinets.)

Features and Specifications

- Relays are rated for all light sources as well as motors
- Relays are individually replaceable (except in 4-relay panels)
- One-pole and two-pole relays fit in the same location
- Cabinet is prewired and tested
- Standard transformer has inputs for 120, 277, or 347 volts AC power
- Cabinets may be surface or recess mounted
- Switch inputs can be configured as pulled-up to 24 VDC (externally supplied) or pulled-down to common
- Inputs can connect to a variety of switches, occupancy sensors, photocells, and contact closures
- Low-voltage Class 2 (PELV) wiring connects cabinets to external controls

Dimensions
- L900-RE4SD-104   10 x 10 x 4 inches (254 x 254 x 102 mm)
- L900-RE4SD-204   10 x 10 x 4 inches (254 x 254 x 102 mm)
- L900-R24SD-000   20.25 x 34 x 4 inches (514 x 864 x 102 mm)
- L900-R48SD-000   20.25 x 54 x 4 inches (514 x 1372 x 102 mm)

Supply Voltage   120/277/347 VAC, 50/60 Hz, phase to neutral
Construction   NEMA 1 enclosure, IP-20 protection, 16 gauge steel, indoor use only, surface or recess mount

Regulatory
- UL 924, UL, and CUL Listed
- CEC Title 24 Compliant
- ASHRAE 90.1 Compliant

Environmental Limits
- Operating Temp.   32 to 104° F (0 to 40° C)
- Humidity   0 to 95% RH, non-condensing

KMC Lighting L200 Series
Lighting Control Relays

SP-070

L211-RELAY-ST2
L200-RELAY-1NC

L201-RELAY-2NC
L202-RELAY-2PL
L203-RELAY-347

L206-RELAY-LAT

Relay cards are the heart of the KMC Lighting system. They provide the actual control of the load as directed by the control electronics. KMC Lighting products use individual relay cards for each circuit, allowing for the most flexibility in matching the relay type to specific system requirements. A single relay card for a single circuit allows an infinite arrangement of relay type-to-position in your system and supports individual replacement should the need ever occur. From the panel, each relay can be controlled as follows:

- Override On
- Override Off
- Locked Override On
- Locked Override Off
- Timed On
- Timed Override Off

NOTE: KMC Lighting relays are for installation in KMC Controls lighting cabinets only.

Features and Specifications

- Provide zero-cross circuitry, eliminating arcing at mechanical contacts when loads are switched and extending life
- Relays individually replaceable
- Easy mounting of each relay module with a single screw
- Listed for use with ballasted loads

Environmental Limits

- Operating Temp. 32 to 104° F (0 to 40° C)
- Humidity 0 to 95% RH, non-condensing

Models

Model (pack of 8)	Type	Max. Voltage	Tungsten Rating (120 V)	Inductive Ballast, Transformer, HID Rating
L211-RELAY-ST2	1 Pole NO	277 V	20 A	20 A
L202-RELAY-2PL	2 Pole NO	277 V each pole (480V)	-	20 A
L200-RELAY-1NC	1 Pole NC	277 V	20 A	20 A
L201-RELAY-2NC	2 Pole NC	277 V each pole (480 V)	-	20 A
L203-RELAY-347	1 Pole NO	347 V	-	20 A
L206-RELAY-LAT	1 Pole Latching	277V	20A	20 A
		347V	-	15 A

KMC Lighting L00LVS Series
Low Voltage Switches

L00LVS-01W **L00LVS-02W** **L00LVS-03W** **L00LVS-04W**

L00LVS-05W **L00LVS-06W** **L00LVS-08W** **L00LVS-10W**
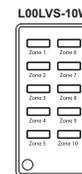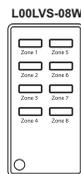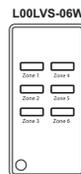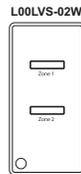
Locater LED

These low voltage switches incorporate reliable technology into contemporary style. The switches, with up to ten buttons per gang, are mounted in a standard deep switch box. Features include:

- Status LED for each button provides true relay status, and round locator LED facilitates finding the switches in the dark when no others are illuminated
- When connected to a KMC Lighting network, switches can be programmed for On, Off, On/Off, Groups, or Presets/Scenes
- Can connect and control other manufacturers low-voltage equipment
- Supplied in white
- Matching screwless wall plate (see Accessories)

Features and Specifications

|	
Wiring	1 wire for 24 VDC, 2 wires for each button (1 wire for switch and 1 wire for LED), and 1 wire for locator LED
Dimensions	4.31 x 1.63 x 1.75 inches (110 x 41 x 44 mm)
Input power	24 VDC, 13 mA to 75 mA load consumption (dependent on number of buttons)

Environmental Limits

- Operating Temp. 32 to 104° F (0 to 40° C)
- Humidity 0 to 95% RH, non-condensing

Models

L00LVS-01W	Low voltage switch, 1 button
L00LVS-02W	Low voltage switch, 2 button
L00LVS-03W	Low voltage switch, 3 button
L00LVS-04W	Low voltage switch, 4 button
L00LVS-05W	Low voltage switch, 5 button
L00LVS-06W	Low voltage switch, 6 button
L00LVS-08W	Low voltage switch, 8 button
L00LVS-10W	Low voltage switch, 10 button

Accessories

L80301-SW	Wall plate, single gang, white (10 pack)
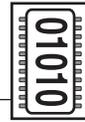
KMC Lighting L80301 Series
Momentary Action Switches

These momentary action wall switches are attractive single-pole, double-throw switches. Features include:
- Quiet operation
- Commercial grade construction
- Mounts in standard deep electrical box
- Three colors (white, almond, or ivory) to match any decor
- Matching wall plates available (see Accessories)

Specifications

Electrical Rating	Switch contacts rated for 3 A @ 24 V
Switch Action	SPDT, momentary action, center off
Connections	Screw terminals, back- and side-wired
Construction	Thermoplastic and steel

Models

L56081-2A	Momentary action switch, almond (10 pack)
L56081-2I	Momentary action switch, ivory (10 pack)
L56081-2W	Momentary action switch, white (10 pack)

Accessories (Wall Plates)

Order the following wall plates in the color that matches the model of switch:

L80301-SA	Plate, single gang, almond (10 pack)
L80301-SI	Plate, single gang, ivory (10 pack)
L80301-SW	Plate, single gang, white (10 pack)

KMC Lighting LZMDSW Series
Digital Switches
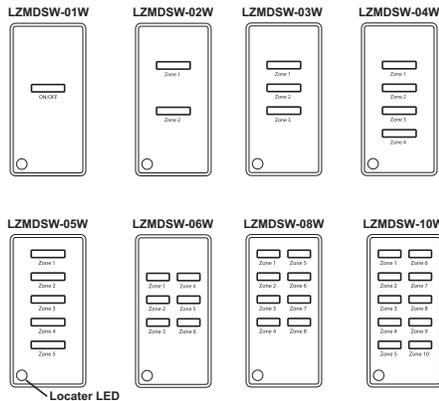
These digital lighting switches connect to lighting control cabinet network wiring. The switches, with up to ten buttons per gang, are mounted in a standard deep switch box. Features include:
- Simplified connections (four wires no matter how many buttons) greatly reduces numbers of required wires for multiple buttons
- Status LED for each button provides true relay status, and round locator LED facilitates finding the switches in the dark when no others are illuminated
- Matching screwless wall plate
- Up to 127 digital switches and cabinets can be connected on a sub-network
- When connected to a KMC Controls Lighting network, switches can be programmed for On, Off, On/Off, Groups, or Presets/Scenes.
- Supplied in white

Features and Specifications

Wiring	Two power wires (24 VDC and common) and separate shielded, twisted-pair signal wires connect the cabinet sub-network
Dimensions	4.31 x 1.63 x 1.75 inches (110 x 41 x 44 mm)
Input power	24 VDC, 15 mA to 33 mA load consumption (dependent on number of buttons)
Environmental Limits	
• Operating Temp.	32 to 104° F (0 to 40° C)
• Humidity	0 to 95% RH, non-condensing

Models

LZMDSW-01W	Digital switch with 1 button
LZMDSW-02W	Digital switch with 2 button
LZMDSW-03W	Digital switch with 3 button
LZMDSW-04W	Digital switch with 4 button
LZMDSW-05W	Digital switch with 5 button
LZMDSW-06W	Digital switch with 6 button
LZMDSW-08W	Digital switch with 8 button
LZMDSW-10W	Digital switch with 10 button

Accessories

L80301-SW	Wall plate, single gang, white (10 pack)

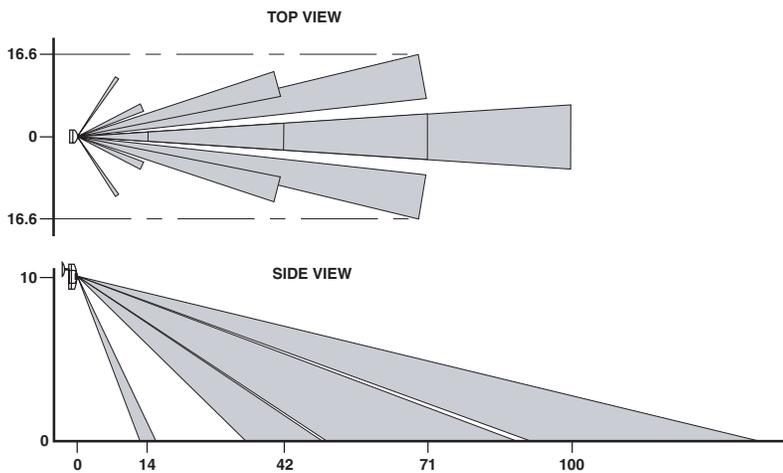# KMC Lighting LOSC15-I0W
Ceiling Mount Occupancy Sensor

This occupancy sensor mounts quickly to the ceiling and directly connects to KMC Lighting cabinets. The passive infrared sensing features a semiconductor heat detector behind a Fresnel lens. This multi-zone lens establishes dozens of areas of detection. The sensor is sensitive to the heat emitted by the human body. The sensor triggers only when the source of heat moves from one zone of sensing to another. Hot stationary objects and air currents do not cause false triggers. Other features include

- Small size—installed sensor appears almost invisible
- Fast, easy ceiling mount with low voltage wire connection and twist-lock sensor attachment
- Self-adjusting and self-calibrating
- Powered from KMC Lighting cabinets
- Self-adjusting timer is factory-set at 10 minutes, but user can select from 30 seconds to 30 minutes with internal controls, and sensor may increase timer automatically through self-adapting features to meet room or occupancy patterns
- Learned and adjusted settings, saved in protected memory, are not lost during power outages
- Ambient light recognition—photocell optionally prevents lights from turning on when the room is adequately lit by natural light

NOTE: KMC Lighting occupancy sensors are for installation with KMC Lighting cabinets only.

Features and Specifications

Wiring	Color-coded wire leads, 6 inches long (152 mm)
Dimensions	1.5 x 4.5 inches (38 x 114 mm)
Input power	24 VDC, 20 mA
Output	24 VDC, active high logic control signal with short circuit protection
Weight	5 ounces (141 grams)
Housing	High-impact, injection molded plastic
Coverage	1500 sq ft
Motion indicator	Red LED
Infrared sensitivity	High to low
Ambient light photocell	
	20 to 3,000 lux, factory set at 3,000 lux
Timer adjustment	30 seconds to 30 minutes, factory-set at 10 minutes

Environmental Limits
- Operating Temp. 32 to 104° F (0 to 40° C)
- Humidity 0 to 95% RH, non-condensing

TOP VIEW

SIDE VIEW

Range and Coverage

01010
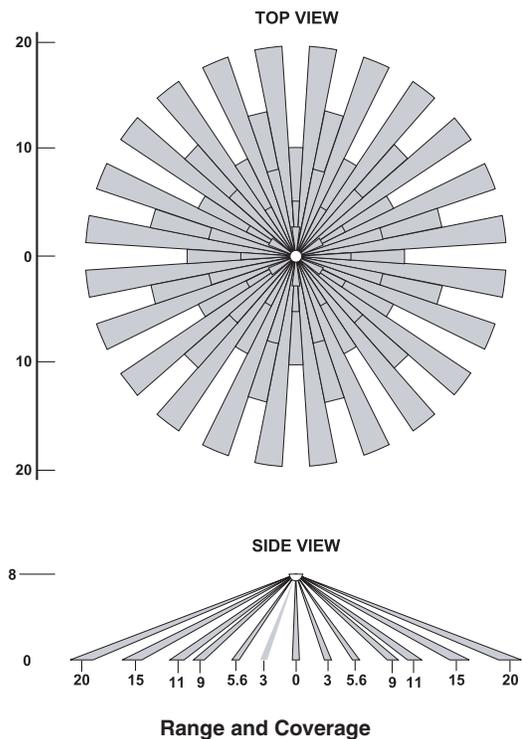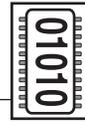
KMC Lighting LOSWLR-IOW/LOSWWV-IOW
Wall Mount Occupancy Sensor

This occupancy sensor mounts quickly to the ceiling and directly connects to KMC Lighting cabinets. The passive infrared sensing features a semiconductor heat detector behind a Fresnel lens. This multi-zone lens establishes dozens of areas of detection. The sensor is sensitive to the heat emitted by the human body. The sensor triggers only when the source of heat moves from one zone of sensing to another. Hot stationary objects and air currents do not cause false triggers. Other features include:

- Wide-view or long-range models available to cover a wide range of space shapes and sizes
- Fast, easy mount to a wall or the ceiling using a supplied twist-and-lock bracket; can be used with raceways for hard surface installing
- Self-adjusting and self-calibrating
- Powered from KMC Lighting cabinets
- Self-adjusting timer is factory-set at 10 minutes, but user can select from 30 seconds to 30 minutes with internal controls, and sensor may increase timer automatically through self-adapting features to meet room or occupancy patterns
- Learned and adjusted settings, saved in protected memory, are not lost during power outages
- Ambient light recognition—photocell optionally prevents lights from turning on when the room is adequately lit by natural light

Features and Specifications

Wiring	Color-coded wire leads, 6 inches long (152 mm)
Dimensions	5.5 x 2.8 x 4.67 inches (140 x 71 x 119 mm)
Input power	24 VDC, 20 mA
Output	24 VDC, active high logic control signal with short circuit protection
Weight	6 ounces (170 grams)
Housing	High-impact, injection molded plastic
Motion indicator	Red LED
Infrared sensitivity	High to low
Ambient light photocell	20 to 3,000 lux, factory set at 3,000 lux
Timer adjustment	30 seconds to 30 minutes, factory-set at 10 minutes.

Environmental Limits
- Operating Temp. 32 to 104° F (0 to 40° C)
- Humidity 0 to 95% RH, non-condensing

Models

LOSWLR-IOW	Wall mount occupancy sensor, long range (100 ft., 14 ft. wide at 10 ft. height)
LOSWWV-IOW	Wall mount occupancy sensor, wide view (2500 sq. ft. at 8 ft. height)

NOTE: KMC Lighting occupancy sensors are for installation with KMC Lighting cabinets only.

TOP VIEW

SIDE VIEW

LOSWLR-IOW Range and Coverage

TOP VIEW

SIDE VIEW
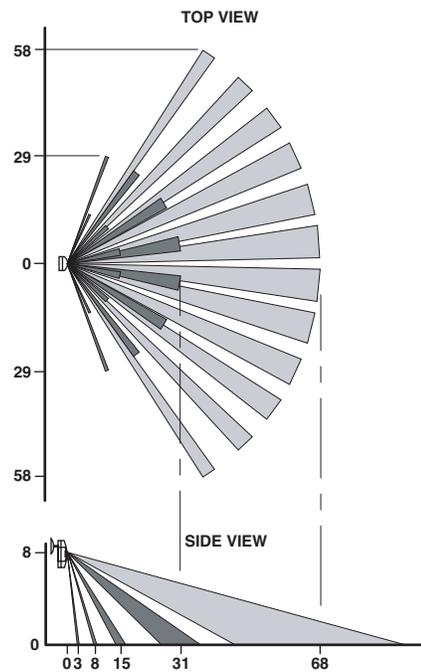
LOSWWV-IOW Range and Coverage

Programmable Thermostats

BAC-10000 Series
FlexStat Programmable Thermostats

This series of intelligent temperature/humidity-sensing, wall-mounted, thermostat/controllers are native BACnet Advanced Application Controllers (B-AAC) for use in a BACnet system. The FlexStat simplifies networked zone control for common packaged HVAC equipment, such as packaged roof top units, fan coil units, heat pumps, and other similar applications. In addition, applications such as pressure-dependent VAV, terminal reheat, and medium-sized central-station air-handling-equipment applications may also be addressed through the libraries of programs built into the devices.

The on-board library of programs permits rapid configuration of a wide range of HVAC control applications, including, for example, single- and multi-stage packaged and unitary split systems, factory-packaged economizers, field-applied economizers, water-source and air-to-air heat pumps, fan coil units, and central-station air handling units.

The FlexStat also provides the capability to customize the standard library of sequences using KMC's BACstage or TotalControl. This enables a local authorized KMC installing contractor to adapt the standard library to unique site needs and application-specific requirements encountered on many projects on a case-by-case basis.

Models

Model	Outputs*	Humidity Sensor
BAC-10030C	3 Relays (Binary Outputs)	No
BAC-10130C		Yes
BAC-10090C	9 Relays	No
BAC-10190C		Yes
BAC-10036C	3 Relays and 6 Analog Outputs	No
BAC-10136C		Yes
BAC-10063C	6 Relays and 3 Analog Outputs	No
BAC-10163C		Yes

*Analog outputs produce 0–12 VDC, **20 mA** max., and binary outputs (relays) carry **1 A** max. @ 24 VAC/VDC. All models have 3 analog inputs.
(*Not all models available at original release of series.*)

Standard hardware options include a mix of output configurations (relays and analog outputs), on-board humidity sensing, and inputs for additional analog and binary type remote external sensors, such as occupancy and CO_2 sensors. The additional physical inputs are integrated with the standard on-board control sequences to provide the option for intermittent-occupancy and CO_2-based demand ventilation control while using a simple wall-mounted thermostat/controller device.

Accessories

See the BAC-10000 Series Accessories section below.

BAC-10000 Series Accessories

HPO-0044	Replacement cover hex screw	
KMD-5575	Network repeater/isolator	
KMD-5567	Surge suppressor	
KMD-5576	EIA-485 to USB Communicator	
KMD-5624	PC data port (EIA-485) cable (FlexStat to USB Communicator)	
KMD-5699	FlexStat firmware flash upgrade kit	
SP-001	Flat blade and hex end screwdriver (with KMC logo) for cover hex screws	
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub	
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub	

KMDigital Controllers and Hardware
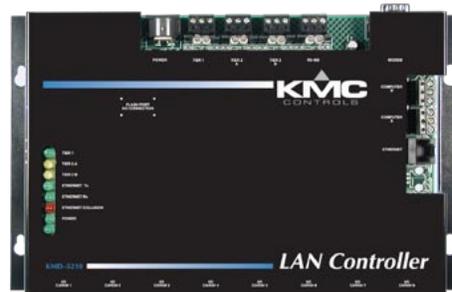
Direct Digital Controllers, General Purpose

KMDigital 5xxx Controller Replacement Cross-Reference

When replacing one of these discontinued controllers, use this chart to find the nearest equivalent available controller.

SEE ALSO: The *Software* section.

KMD-5110/5111

Discontinued Controller	Replacement Controller
KMD-5110 (Multinet)	KMD-5210
KMD-5111 (Multinet)	KMD-5210

NOTE: Wiring locations are different in the replacement series.

KMD-5501/5502/5504/5505

Discontinued Controller	Replacement Controller
KMD-5501/5504 (8 x 8)	KMD-5801
KMD-5502/5505 (8 x 8)	KMD-5802

NOTE: Wiring locations are different in the replacement series. Also, for converting older KMD-5501/5502 PRG files to PNL files used in the newer controllers, a Panel File Conversion program is available as part of the **Tech Tools EXE** file download in the Software Updates section of the KMC Controls web site. (You must be logged in to access that section.)

KMD-5821

Discontinued Controller	Replacement Controller
KMD-5821 (8 x 8 with 16-bit inputs)	(Tier 1) KMD-5210 and KMD-5220 (input module with 16, 16-bit inputs) and KMD-5221 (output module with 16 outputs) OR, if 16-bit inputs are not required, (Tier 2) KMD-5801 (8 x 8 with 10-bit inputs)

NOTE: Wiring locations are different in the replacement series.
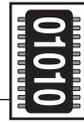
KMD-5205 Series
LANLite Controller, Tier 1, 8 x 8

Tier 1, KMD-5205 LANLite Ethernet-ready, direct digital controllers can operate stand-alone in small installations or expand existing KMC peer-to-peer networks. They have the features of popular 8 x 8 controllers and the communications power of KMC's primary Tier 1 controller, the KMD-5210. As part of a complete building automation system, they provide precise monitoring and control of connected points, such as control of room temperature, humidity, fans, monitors refrigeration, lighting, and other building automation functions. They install and configure easily, are intuitive to program, and contain modular jacks for quick connections to NetSensors.

Models

KMD-5205	LANLite controller
KMD-5205-005	LANLite controller with Modbus interface

Accessories

883-319-01	Replacement board guide rack insert
902-305-02	Replacement flat cover
902-602-04	Replacement 3-pin removable terminal block
902-602-06	Replacement 5-pin removable terminal block
883-602-23	Replacement 7-pin removable terminal block
902-602-08	Replacement 8-pin removable terminal block
902-600-05	Replacement fuse, 1.6 A, fast acting, 5 x 20 mm
HCO-1034	Steel control panel enclosure, 16 W x 18 H x 6" D
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-6700 series	Output override boards (see the **Output Override Boards** section)
HPO-6802	Output override board cover (required when using any of the above boards)
KMD-5673	EIA-232 cable, KMD-5205 to PC, dual female 9-pin D-sub connectors, 6-foot long
KMD-5674	Modem cable, female 9-pin and male 25-pin D-sub connectors
HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub

Features and Specifications

Inputs
- 8 universal inputs, each of which is programmable as an analog or digital
- Pull-up resistors (jumper-selectable for none, 1K, or 10K ohms) for switch contacts and other unpowered equipment
- Removable screw terminal blocks, wire size 14–22 AWG
- 12-bit analog-to-digital conversion
- Pulse counting to 1000 Hz
- 0–5 volts DC analog input range
- Standard and custom units of measure

Outputs
- 8 universal outputs, each of which is programmable as analog or digital
- Slots for HPO-6700 series output override boards
- Removable screw terminal blocks, wire size 14–22 AWG
- 0–10 volts DC for analog output range
- 0/12 volts DC for digital output range
- Short-protected outputs, output current limited to 50 mA per output (or 400 mA total)

Communications
- 10 base T Ethernet port supports 31 KMC Tier 1 controllers
- EIA-485 supports connections to 32 KMC Tier 2 controllers
- EIA-232 connects directly to computer serial port or optional external modem for remote operation

Other features
- 127 networked points in from Tier 1 controllers, 512 from Tier 2 controllers
- 64 networked points out to Tier 1 controllers, 64 to Tier 2 controllers
- 10 Control Basic program areas
- 8 PID control loops
- 128 program variables software selectable as analog or digital with standard and custom units of measure
- Real time clock with power backup for 72 hours
- 5 user defined tables
- Programmable for automatic daylight saving time by date, day of month, and time of day
- Programs and program parameters are stored in nonvolatile memory
- Auto restart on power failure
- Custom graphics, schedules, trend logs, and password access are also available
- NetSensor compatible with connection through modular connector

Installation
- Supply voltage   24 volts AC (–15%, +20%), 25 VA, Class 2
- Weight   16 ounces (454 g)
- Dimensions   6.56 x 9.00 x 1.12 inches (167 x 229 x 32 mm)
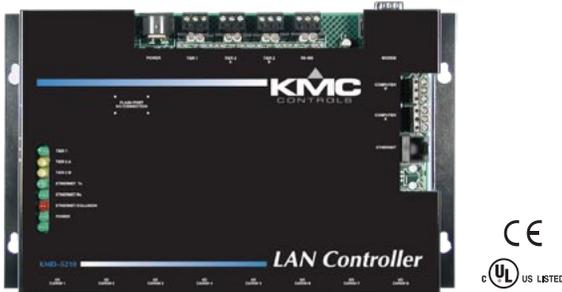- Case material   Black powder-coated steel

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% RH (non-condensing)

Regulatory
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
- CE compliant

KMD-5210/5211 Series

LAN Controller with Optional BACnet Interfaces, Tier 1

The KMD-5210 LAN Controller is an intelligent, programmable direct digital controller and high-level LAN communications manager suitable for use in building automation systems. The LAN Controller operates as a stand-alone unit or as an integral part of a fully networked peer-to-peer digital system.

Control up to 128 inputs or outputs by adding up to eight KMD-5220 Input Modules or KMD-5221 Output Modules. Each provides for 16 inputs or outputs.

The standard KMD-5210 is available with an optional BACnet Ethernet 802.3 interface (KMD-5210-001) or BACnet MS/TP interface (KMD-5210-002) for connecting to BACnet networks.

The KMD-5210 series requires the KMD-5563 power supply (purchased separately). The KMD-5211 includes the power supply.

Models

KMD-5210	LAN Controller (w/o KMD-5563 power supply)
KMD-5210-001	LAN Controller with BACnet Ethernet 802.3 interface (w/o power supply)
KMD-5210-002	LAN Controller with BACnet MS/TP interface (w/o power supply)
KMD-5211	LAN Controller (with KMD-5563 power supply included)

KMD-5210 Accessories

902-602-04	Replacement 3-pin removable terminal block
HCO-1034	Steel control panel enclosure, 16 W x 18 H x 6" D
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-5201	Upgrade CD, add BACnet 802.3 interface to standard LAN Controller
KMD-5202	Upgrade CD, add BACnet MS/TP interface to standard LAN Controller
KMD-5220	Input module
KMD-5221	Output module
KMD-5563	5/±15 VDC power supply with 5-pin DIN connector (included with KMD-5211, order separately for all others)
KMD-5569	External 56K modem
KMD-5660	6" I/O ribbon cable to KMD-5220/5221
KMD-5668	9" I/O ribbon cable to KMD-5220/5221
KMD-5661	14" I/O ribbon cable to KMD-5220/5221
KMD-5662	19" I/O ribbon cable to KMD-5220/5221
KMD-5663	24" I/O ribbon cable to KMD-5220/5221
KMD-5672	EIA-232 serial to PC cable

Features and Specifications

Communications

- 10BaseT Ethernet port supports up to 31 KMC Tier 1 controllers
- Two EIA-485 ports, each supports connections with up to 124 KMC Tier 2 controllers
- EIA-232 serial port connects directly to computer serial port
- DB-9 serial connector for external modem cable

Other features

- Up to 128 inputs or outputs by adding up to eight KMD-5220 Input Modules or KMD-5221 Output Modules
- 127 networked points in from Tier 1 controllers, 512 from Tier 2 controllers
- 127 networked points out to Tier 1 controllers, 64 to Tier 2 controllers
- 128 Control Basic program areas
- 64 PID control loops
- 256 program variables, software selectable as analog or digital with standard and custom units of measure
- Five user defined tables
- 64 system groups for organizing 160 controller selected points or elements into real-time or color graphic displays
- 32 weekly schedules with overrides
- 16 annual schedules
- 96 trend logs for data logging; each supports up to 6 analog, digital, or virtual elements or points (graphical display capabilities when linked to a KMC Digital Operating System)
- 128 run-time logs with time/date stamp and cumulative run-time functions
- Buffering for up to 128 alarms and 50 messages
- Six operator access levels and 256 user passwords
- On-board 68-character alarm or maintenance messages
- Programmable for automatic daylight saving time by date, day of month, and time of day
- Programs and program parameters are stored in nonvolatile memory
- Real time clock with power backup for 72 hours
- Auto restart on power failure

Installation

• Supply voltage	120/240 VAC (to required KMD-5563 power supply)
• Weight	1.8 lbs. (0.8 kg)
• Dimensions	10.50 x 6.50 x 0.98 inches (267 x 165 x 25 mm)
• Case material	Black powder-coated steel

Environmental limits

• Operating	32 to 120° F (0 to 49° C)
• Shipping	–40 to 140° F (–40 to 60° C)
• Humidity	0 to 95% RH (non-condensing)

Regulatory

- UL 916 Energy Management Equipment listed
- CE compliant
- FCC Class B, Part 15, Subpart B

SEE ALSO: The *Software* section and the *Accessories, Controller* section.
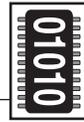
KMD-5220/5221
I/O Modules (for KMD-5210/5211 Series)

CE

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KMD-5220 Accessories

902-600-04	Fuse, 1 A, fast acting, 5 x 20 mm
902-602-08	Replacement 8-pin removable terminal block
HCO-1034	Steel control panel enclosure, 16 W x 18 H x 6" D
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-0063	Replacement two-pin jumper

KMD-5221 Accessories

902-600-04	Fuse, 1 A, fast acting, 5 x 20 mm
883-602-17	Replacement 6-pin removable terminal block
883-602-23	Replacement 7-pin removable terminal block
883-319-01	Replacement board guide rack insert
902-305-02	Replacement flat cover
HPO-6700 series	Output override boards (see the **Output Override Boards** section)
HPO-6802	Output override board cover (required when using any of the HPO-6700 series boards)
XEE-6111-100	Transformer, 120-to-24 VAC, 100 VA, single hub
XEE-6112-100	Transformer, 120-to-24 VAC, 100 VA, dual hub
XEE-6311-100	Transformer, 120/240/277/480-to-24 VAC, 100 VA, dual hub

Features and Specifications

INPUTS (KMD-5220 Module)
- 16 universal inputs, each of which is programmable as an analog or digital
- Inputs configurable via jumper for 1K or 10K ohm pull-up resistors (for unpowered contacts or devices), 0–5 VDC, or 4–20 mA
- 16-bit analog-to-digital conversion
- Pulse counting to 1000 Hz
- Overvoltage input protection, 24 VAC continuous
- Removable screw terminal block, wire size 14–22 AWG

OUTPUTS (KMD-5221 Module)
- 16 universal short-protected outputs, each of which is programmable as analog or digital
- 16 slots for HPO-6700 series output override boards
- Removable screw terminal block, wire size 14–22 AWG
- 0–10 volts DC for analog output range
- 0/12 volts DC (on/off) for digital output range
- Output current limited to 50 mA per output (800 mA total/module)

Installation
- Supply voltage   24 volts AC (–15%, +20%), 100 VA (for KMD-5221 output module only), Class 2
- Weight   1.0 lbs. (0.45 kg)
- Dimensions   4.50 x 9.0 inches (267 x 165 x 25 mm)

Environmental limits
- Operating   0 to 120° F (–18 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% RH (non-condensing)

Regulatory
- UL 916 Energy Management Equipment listed
- CE compliant
- FCC Class B, Part 15, Subpart B

Models

KMD-5220	Input module, 16 inputs
KMD-5221	Output module, 16 outputs

KMD-5230/5240 Series
LAN Controller Panels

cULus LISTED
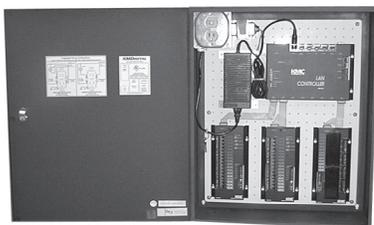
These factory-configured systems include an HCO-1035/1036 lockable steel control panel enclosure, a KMD-5210 series LAN Controller, receptacle, power disconnect switch, KMD-5563 power supply.

Optional devices include up to four KMD-5220/5221 input/output modules and a 24-volt 100 VA transformer for models with output modules.

Models without output modules require a maximum supply current of 1.5 A; those with output modules require 5.7 A.

Regulatory
- UL 916 Enclosed Energy Management Equipment listed
- UL 2017 Signal System Equipment listed

Models

To include a BACnet 802.3 interface, add -001 to the model number in the chart below (e.g., KMD-5230-001). To include an MS/TP interface, add -002 (e.g., KMD-5230-002).

		Inputs				
		0	**16**	**32**	**48**	**64**
Outputs	**0**	KMD-5230	KMD-5231	KMD-5232	KMD-5233	KMD-5234*
	16	KMD-5241	KMD-5240	KMD-5236	KMD-5237*	
	32	KMD-5242	KMD-5235	KMD-5239*		
	48	KMD-5243	KMD-5238*			
	64	KMD-5244	*Housed in 24 x 36 x 6" enclosure; others are 20 x 24 x 6"			

KMD-5270 Series
WebLite Controller, Tier 1, 8 x 8

The KMD-5270 series Tier 1, Ethernet-ready, direct digital controllers can operate stand-alone in small installations or expand existing KMC peer-to-peer networks. They have the features of popular 8 x 8 controllers plus they can serve up graphics-based web pages to any Internet-ready device without special software. As part of a complete building automation system, they provide precise monitoring and control of connected points, such as control of room temperature, humidity, fans, lighting, and other building automation functions.

The KMD-5270-001 with the BACnet interface establishes a path between a BACnet 802.3 network and a KMDigital network. The KMD-5270-001 does so with Modbus.

Models

KMD-5270	WebLite, standard
KMD-5270-001	WebLite with BACnet Ethernet 802.3 interface
KMD-5270-005	WebLite with Modbus interface

Accessories

883-319-01	Replacement board guide rack insert
902-305-02	Replacement flat cover
902-602-04	Replacement 3-pin removable terminal block
902-602-06	Replacement 5-pin removable terminal block
883-602-23	Replacement 7-pin removable terminal block
902-602-08	Replacement 8-pin removable terminal block
902-600-05	Replacement fuse, 1.6 A, fast acting, 5 x 20 mm
909-600-01	Replacement fuse, 125 mA, fast acting, 5 x 20 mm
HCO-1034	Steel control panel enclosure, 16 W x 18 H x 6" D
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-6700 series	Output override boards (see the **Output Override Boards** section)
HPO-6802	Output override board cover (required when using any of the above boards)
KMD-5673	EIA-232 cable, KMD-5205 to PC, dual female 9-pin D-sub connectors, 6-foot long
KMD-5674	Modem cable, female 9-pin and male 25-pin D-sub connectors
HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub

SEE ALSO: The *Output Override Boards* section and the *Accessories, Controller* section.

Features and Specifications

Internet and email
- A web browser can view and change the following: inputs, outputs, variables, controllers, system groups, trend logs (requires Java VM), run time logs, weekly and annual schedules, alarm summary
- Requires Microsoft Internet Explorer 5.0 or higher with service pack 2 or higher; Netscape 7.0 and Java VM enabled
- Send email text messages, input, output, and trend log data (requires access to SMTP email server)

Inputs
- 8 universal inputs, each of which is programmable as analog or digital
- Pull-up resistors (jumper-selectable for none, 1K, or 10K ohms) for switch contacts and other unpowered equipment
- Removable screw terminal block, wire size 14–22 AWG
- 12-bit analog-to-digital conversion
- Pulse counting to 1000 Hz
- 0–5 volts DC analog input range
- Standard and custom units of measure

Outputs
- 8 universal outputs, each of which is programmable as analog or digital
- Slots for HPO-6700 series output override boards
- Removable screw terminal block, wire size 14–22 AWG
- 0–10 volts DC for analog output range
- 0/12 volts DC for digital output range
- Short-protected outputs, output current limited to 50 mA per output (or 400 mA total)

Communications
- 10BaseT Ethernet port supports 31 KMC Tier 1 controllers
- EIA-485 supports connections to 31 KMC Tier 2 controllers
- EIA-232 connects directly to computer serial port or optional external modem for remote operation

Other features
- 127 networked points in from Tier 1 controllers, 512 from Tier 2 controllers
- 64 networked points out to Tier 1 controllers, 64 to Tier 2 controllers
- 10 Control Basic program areas
- 8 PID control loops
- 128 program variables software selectable as analog or digital with standard and custom units of measure
- Real time clock with power backup for 72 hours
- Programs and program parameters are stored in nonvolatile memory
- Auto restart on power failure
- Custom graphics, schedules, trend logs, and password access are also available

Installation
- Supply voltage   24 volts AC (–15%, +20%), 25 VA, Class 2
- Weight   16 ounces (454 g)
- Dimensions   6.56 x 9.00 x 1.12 in. (167 x 229 x 32 mm)
- Case material   Black powder-coated steel

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% RH (non-condensing)

Regulatory
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
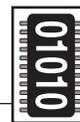
KMD-5801/5802

Direct Digital Controllers, Tier 2, 8 x 8

The KMD-5801/5802 Tier 2, fully programmable, direct digital controllers are versatile general purpose controllers in stand-alone environments or networked to other KMDigital devices. As part of a complete building automation system, they provide precise monitoring and control of connected points, such as control of 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 NetSensors. The KMD-5801 includes a real-time clock with power backup for 72 hours.

Models

KMD-5801	Digital controller with real-time clock
KMD-5802	Digital controller without real-time clock

Accessories

HPO-6700 series	Output override boards (see the **Output Override Boards** section)
902-602-04	Replacement three-pin removable terminal block
031-602-02	Replacement four-pin removable terminal block
883-602-17	Replacement six-pin removable terminal block
902-600-04	Replacement fuse, 1 A, fast acting, 5 x 20 mm
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
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub

Features and Specifications

Inputs
- 8 universal inputs, each of which is programmable as an analog, digital, or pulse counting point
- Pull-up resistors (switch selectable for none or 10K ohms) for switch contacts and other unpowered equipment
- Removable screw terminal blocks, 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
- 8 universal outputs, each of which is programmable as analog or digital
- Standard and custom units of measure
- Slots for HPO-6700 series output override boards
- Removable screw terminal blocks, wire size 14–22 AWG
- 0–10 volts DC for analog
- 0/12 volts DC for digital
- Short-protected outputs, output current limited to 100 mA per output or 350 mA total

Other features
- 5 Control Basic program areas
- Program variables PID loops, schedules, trend logs, alarms, and password protection also available
- Programs and program parameters are stored in nonvolatile memory
- Auto restart on power failure
- EIA-485 operating up to 38.4 kilobaud
- NetSensor compatible with connection through modular connector
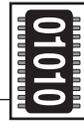
Installation
- Supply voltage   24 volts AC (–15%, +20%), 25 VA, Class 2
- Weight   14 ounces (395 g)
- Case material   Black flame-retardant plastic

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% RH (non-condensing)

Regulatory
- CE compliant
- FCC Class B, Part 15, Subpart B
- UL 916 Energy Management Equipment listed
- UL 864 Smoke Control Equipment listed (UUKL)

KMD-5501/5502/5504/5505 and KMD-5821 Controller Replacements

KMD-5831
Direct Digital Controller, Tier 2, 16 x 12

This direct digital controller has the features of KMC's popular 8 x 8 controllers but with extra inputs and outputs. Use it as a stand-alone controller or combine it with other controllers to build a KMC peer-to-peer network. As part of a complete building automation system, it provides precise monitoring and control of connected points, such as control of room temperature, humidity, fans, lighting, and other building automation functions. It installs and configures easily, is intuitive to program, and contains modular jacks for quick connections to NetSensors.

Accessories

883-319-01	Replacement board guide rack insert
902-305-02	Replacement flat cover
902-602-04	Replacement three-pin removable terminal block
031-602-02	Replacement four-pin removable terminal block
883-602-17	Replacement six-pin removable terminal block
902-600-05	Replacement fuse, 1.6 A, fast acting, 5 x 20 mm
HCO-1034	Steel control panel enclosure, 16 W x 18 H x 6" D
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-6700 series	Output override boards (see the **Output Override Boards** section)
HPO-6802	Output override board cover (required when using any of the above boards)
HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub

SEE ALSO: The *NetSensors* section, *Output Override Boards* section, and the *Accessories, Controller* section.

Features and Specifications

Inputs
- 16 universal inputs, each of which is selectable for an analog or digital signal
- Pull-up resistors (switch selectable for none or 10K ohms) for switch contacts and other unpowered equipment
- Removable screw terminal blocks, wire size 14–22 AWG
- 10-bit analog-to-digital conversion
- Pulse counting to 8 Hz
- 0–5 volts DC analog input range
- Overvoltage input protection

Outputs
- 12 universal outputs, each of which is programmable as an analog or binary object
- Standard and custom units of measure
- Slots for HPO-6700 series output override boards
- Removable screw terminal blocks, wire size 14–22 AWG
- 0–10 volts DC for analog objects
- 0/12 volts DC for binary objects
- Short-protected outputs, output current limited to 100 mA per output (or 300 mA total on outputs 1–8 and 300 mA total on outputs 9–12)

Other features
- 10 Control Basic program areas
- Program variables PID loops, schedules, trend logs, alarms, and password protection also available
- Programs and program parameters are stored in nonvolatile memory
- Real-time clock with power backup for 72 hours
- Auto restart on power failure
- EIA-485 operating up to 38.4 kilobaud
- NetSensor compatible with connection through modular connector

Installation
- Supply voltage   24 volts AC (–15%, +20%), 25 VA, Class 2
- Weight   16 ounces (454 g)
- Case material   Black powder-coated steel

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% RH (non-condensing)

Regulatory
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
- CE compliant

Direct Digital Controllers, Application Specific

KMD-6xxx Controller Replacement Cross-Reference

When replacing the discontinued line of KMD-6xxx controllers, use this chart to find the nearest equivalent upgraded KMD-7xxx controller.

NOTE: Wiring locations are different in the KMD-7000 series. For converting older PRG files to PNL files used in the newer controllers, a Panel File Conversion program is available as part of the **Tech Tools EXE** file download in the Software Updates section of the KMC Controls web site. (You must be logged in to access that section.)

NOTE: KMD-6xxx controllers are only compatible with KMD-1101/1104/1121/1124 NetSensors, which also are discontinued. If a KMD-6xxx controller is replaced with a KMD-7xxx, the connected NetSensor must also be replaced with a newer model.

SEE ALSO: The *KMD-1101/1104/1121/1124 NetSensors Replacement Cross-Reference* and *Software* sections.

Discontinued Controller	Replacement Controller
KMD-6001 (VAV)	KMD-7001
KMD-6002 (VAV)	KMD-7002
KMD-6011 (VAV)	KMD-7011
KMD-6013 (VAV)	KMD-7013
KMD-6051 (VAV)	KMD-7051
KMD-6052 (VAV)	KMD-7052
KMD-6101 (FCU)	KMD-7101
KMD-6102 (FCU)	KMD-7102
KMD-6301 (AHU)	KMD-7301
KMD-6302 (RTU)	KMD-7302
KMD-6401 (HPU)	KMD-7401
KMD-6901 (AHU)	KMD-7301
KMD-6904 (HPU)	KMD-7401
KMD-6905 (FCU)	KMD-7102
KMD-6906 (FCU)	KMD-7101
KMD-6907 (VAV)	KMD-7011
KMD-6908 (VAV)	KMD-7013
KMD-6909 (RTU)	KMD-7302

KMD-7001/7002/7003/7051/7052/7053

VAV Terminal Unit Controllers/Actuators, (4 x 4)

These are 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 KMDigital devices.

The **KMD-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 or three-stage (electric) reheat.

The **KMD-7002/7052** (with three universal outputs), for **dual**-duct VAV terminal unit applications, is designed to operate as the cold duct or master controller in conjunction with a TSP-6001/6051 air flow transducer-actuator as the hot duct or slave controller.

The **KMD-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 or three-stage (electric) reheat.

Models

KMD-7001	3 universal outputs for single duct VAV terminal applications, 18°/minute
KMD-7002	3 universal outputs for dual duct VAV terminal applications, 18°/minute
*KMD-7003	1 universal output, 1 triac, and one relay for VAV fan induction unit applications, 18°/minute
KMD-7051	Same as KMD-7001 with 60°/minute
KMD-7052	Same as KMD-7002 with 60°/minute
*KMD-7053	Same as KMD-7003 with 60°/minute

Accessories

SSS-1002	Air flow sensor, 3-5/32 inches long
SSS-1003	Air flow sensor, 5-13/32 inches long
SSS-1004	Air flow sensor, 7-21/32 inches long
SSS-1005	Air flow sensor, 9-29/32 inches long
HFO-0108	3/8" barb to 1/4" barb union adapter
HFO-0011	Reducer bushing, 1/2" to 3/8" shaft adapter
HMO-4531	Replacement non-rotational bracket
902-602-04	Replacement three-pin removable terminal block
902-602-06	Replacement five-pin removable terminal block
883-602-23	Replacement seven-pin removable terminal block
902-602-08	Replacement eight-pin removable terminal block
HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub

Features and Specifications

Inputs, universal
- 3 universal inputs, each of which is programmable as an analog or digital (fourth input is the airflow sensor)
- 0–5 volts DC analog input range
- 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
- 8-bit analog-to-digital conversion
- 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 KMD-7001/7051/7002/7052, 1 for KMD-7003/7053), each of which is programmable as an analog or digital
- Standard and custom units of measure
- Removable screw terminal block, wire size 14–22 AWG
- 0–10 VDC for analog (50 mA max. each)
- 0/12 VDC for digital (50 mA max. each)

Output, triac
- Optically isolated triac output (1 for KMD-7003/7053)
- Maximum switching 30 VAC at 1 A

Output, relay
- Normally open relay contact (1 for KMD-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:
  - KMD-7001/7002/7003—18°/minute @ 60 Hz., 15°/minute @ 50 Hz
  - KMD-7051/7052/7053—60°/minute @ 60 Hz., 50°/minute @ 50 Hz

Other features
- NetSensor compatible with connection through modular jack
- 5 Control Basic program areas
- Programs and program parameters are stored in nonvolatile memory
- Auto restart on power failure
- EIA-485 operating up to 38.4 kilobaud

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   Black flame-retardant plastic

Environmental limits
- Operating   32 to 120° F (0 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% RH (non-condensing)

Regulatory
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
- (KMD-7003/7053 only) CE compliant*
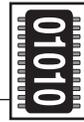
KMD-7011/7011C/7013/7013C
VAV Terminal Unit Controllers, (4 x 4)

These are intelligent, programmable direct digital controllers capable of independent, stand-alone operation or of being networked together with other controllers using the same peer-to-peer communications format as other KMC digital controllers. These controllers are specifically designed for VAV applications and contain factory programmed (canned) control sequences with descriptors:

- The **KMD 7011/7011C** factory programming has options for single duct cooling/heating VAV control, and time proportional (hot water) reheat or three-stage (electric) reheat.
- The **KMD-7013/7013C** factory programming has options for tri-state (floating) damper control for single duct cooling/heating, and time proportional (hot water) reheat or three-stage (electric) reheat.

Of the four inputs, 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 (allowing three free inputs). Also a NetSensor easily connects via a modular jack.

Program area 5 is for additional user programming, which allows the user to add special sequences. The factory programming may also be removed to allow the controllers to be completely user-programmable.

The KMD-7011C/7013C also include a real-time clock for auto time reset after power restoration.

Accessories, All

|	
HCO-1101	Control panel enclosure
HFO-0108	3/8" barb to 1/4" barb union adapter
HMO-4524	Snap Track, 3-1/4 x 8-1/2"
HPO-0054	Fuse bulb
HPO-0063	Jumper
SSS-1002	Air flow sensor, 3-5/32 inches long
SSS-1003	Air flow sensor, 5-13/32 inches long
SSS-1004	Air flow sensor, 7-21/32 inches long
SSS-1005	Air flow sensor, 9-29/32 inches long
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single hub
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual hub

Accessories, KMD-7011/7011C Only

HPO-7504	KMD-7011 CPU board
HPO-7504C	KMD-7011C CPU board
HPO-7604	KMD-7011/7011C I/O board

Accessories, KMD-7013/7013C Only

HPO-7508	KMD-7013 CPU board
HPO-7508C	KMD-7013C CPU board
HPO-7608	KMD-7013/7013C I/O board

Features and Specifications

Inputs, universal
- 3 universal inputs, each of which is programmable as analog or digital
- 0–5 volts DC analog input range
- 0/5 volts DC on/off digital
- Pull-up resistors for switch contacts and other unpowered equipment
- Terminal block, wire size 14–22 AWG

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 (4 for KMD-7011/7011C, 2 for KMD-7013/7013C), each of which is programmable as an analog or digital
- 0–10 volts DC for analog, 60 mA max. each output
- 0/12 volts DC for digital, 100 mA max. each (or 350 mA total)
- Standard and custom units of measure
- Screw terminal block, wire size 14–22 AWG

Triacs (KMD-7013/7013C only)
- 1 optically isolated triac output
- 1 tri-state triac output

Other features
- NetSensor compatible with connection through modular jack
- Programs and program parameters are stored in nonvolatile memory
- Auto restart on power failure
- 32 software configurable variables
- 2 trend log monitors
- 2 runtime totalizer logs
- 2 graphic compatible control groups
- 3 custom-defined look-up tables
- Weekly schedule with holiday/special event overrides
- 4 full-function PID controllers
- Password protection
- EIA-485 operating up to 38.4 kilobaud

Installation
- Supply voltage   24 volts AC (–15%, +20%), 10 VA, Class 2
- Weight   KMD-7011/7011C: 4.25 oz. (121 g)
  KMD-7013/7013C: 4.75 oz. (135 g)
- Size   KMD-7011/7011C: 6-3/4 x 3-1/4" (172 x 83 mm)
  KMD-7013/7013C: 7-1/2 x 3-1/4" (191 x 83 mm)

Environmental limits
- Operating   0 to 120° F (–18 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% RH (non-condensing)

Regulatory
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
- CE compliant

Models

KMD-7011	Controller with 4 universal outputs
KMD-7011C	KMD-7011 with real time clock
KMD-7013	Controller with 2 universal outputs, 1 triac, 1 tri-state triac (generally used with Trane boxes)
KMD-7013C	KMD-7013 with real time clock

KMD-7101/7101C/7102/7102C
FCU Direct Digital Controllers, 4 x 3 or 4 x 4
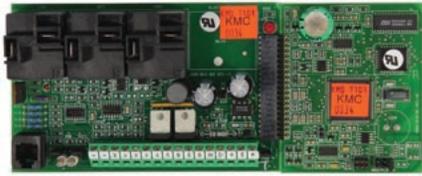
These are intelligent, programmable direct digital controllers designed for fan coil units. They are capable of independent, stand-alone operation or of being networked together with other controllers using the same peer-to-peer communications format as other KMC digital controllers. These controllers are specifically designed for VAV applications and contain factory programmed (canned) control sequences with descriptors:

- The **KMD 7101/7101C** factory programming has options for three-speed auto or manual speed control and time-proportional or two-position hot or chilled water valve control.

- The **KMD-7102/7102C** factory programming also includes auxiliary heat control for the additional relay.

A NetSensor easily connects via a modular jack.

Program area 5 is for additional user programming, which allows the user to add special sequences. The factory programming may also be removed to allow the controllers to be completely user programmable.

The KMD-7101C/7102C also include auto time reset after power restoration.

Models

KMD-7101	FCU controller with 3 outputs (see chart below)
KMD-7101C	KMD-7101 with real time clock
KMD-7102	FCU controller with 4 outputs (see chart below)
KMD-7102C	KMD-7102 with real time clock

Models	Outputs		
	Triacs	Relay	Three-Staged Relays
KMD-7101/7101C	2	0	1
KMD-7102/7102C	2	1	1
"C" at the end of the model name designates a real time clock			

Features and Specifications

Inputs, universal
- 4 universal inputs, each of which is programmable as an analog or digital
- 0–5 volts DC analog input range
- 0/5 volts DC on/off digital
- 10K ohm pull-up resistors for switch contacts and other unpowered equipment
- Screw terminal block, wire size 14–22 AWG

Outputs
- 1 set of 3 relays sequenced by output 1 (30 A, 240 VAC max.)
- 2 optically isolated triac outputs (1 A, 30 VAC max.)
- (KMD-7102/7102C only) 1 relay (30 A, 240 VAC max.)

Other features
- NetSensor compatible with connection through modular jack
- Programs and program parameters are stored in nonvolatile memory
- Auto restart on power failure
- 32 software configurable variables
- 2 trend log monitors
- 2 runtime totalizer logs
- 2 graphic compatible control groups
- 3 custom-defined lookup tables
- Weekly schedule w/ holiday/special event overrides
- 4 full-function PID controllers
- Password protection
- EIA-485 operating up to 38.4 kilobaud

Installation
- Supply voltage   24 volts AC (–15%, +20%), 10 VA, Class 2
- Weight   8 oz. (227 g)
- Size   7-3/8 x 3-1/4" (187 x 83 mm)

Environmental limits
- Operating   0 to 120° F (–18 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% RH (non-condensing)

Regulatory
- UL Recognized Energy Management Equipment
- FCC Class B, Part 15, Subpart B

Accessories, All

HCO-1101	Control panel enclosure
HMO-4524	Snap Track, 3-1/4 x 8-1/2"
HPO-0054	Fuse bulb
HPO-0063	Jumper
HPO-7506:	KMD-7101/7102 CPU board
HPO-7506C:	KMD-7101/7102C CPU board
HPO-7605:	KMD-7101 fan coil, no heat relay
HPO-7606:	KMD-7102 fan coil with heat relay
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single hub
XEE-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual hub

KMD-7311/7312 Attain Cross-Reference

NOTE: The former KMD-7311/7312 Attain package included:

- NetView (KMD-1002) w/ transformer (HPO-0068)
- 4 x 4 controller (KMD-7301C for AHU applications or KMD-7302C for RTU) with transformer (XEE-6111-040)
- 75-foot plenum cable (KMD-5692)
- Wall sensor (STE-5012) and vertical and horizontal mounting plates (HMO-5036/5039)

These components are still available separately.
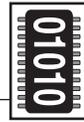
KMD-7300/7400 Series
AHU/RTU/HPU Direct Digital Controllers, 4 x 4

These fully programmable, 4 x 4 direct digital controllers are designed for small air handling units (AHU), roof top units (RTU), 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 KMDigital 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 KMD-7xxxC models include a real-time clock with power backup for 72 hours.

The **KMD-7301/7301C** (with three universal outputs) comes with preprogrammed sequences for AHU applications, including options for fan control based on occupancy/night setback, proportional hot and chilled water valve control, economizer, and freeze protection.

The **KMD-7302/7302C** (with one universal output, one triac, and two dual-staged triacs) comes with preprogrammed sequences for RTU applications, including fan control, two-stage heating, two-stage cooling, and an economizer.

The **KMD-7401/7401C** (with four triacs) comes with preprogrammed sequences for HPU applications, including controlling a fan, compressor, reversing valve, and optional auxiliary heating.

Program area 5 is for additional user programming, which allows the user to add special sequences. The factory programming may also be removed to allow the controllers to be completely user programmable.

The KMD-7xxxC models also include auto time reset after power restoration.

Models

KMD-7301	AHU controller (see chart below)
KMD-7301C	AHU controller with real-time clock
KMD-7302	RTU controller (see chart below)
KMD-7302C	RTU controller with real-time clock
KMD-7401	HPU controller (see chart below)
KMD-7401C	HPU controller with real-time clock

Models KMD-	Type	Outputs		
		Universal	Triacs	Dual Staged Triacs
7301/7301C*	AHU	3	1	0
7302/7302C*	RTU	1	1	2
7401/7401C*	HPU	0	4	0
"C" at the end of the model name designates a real time clock				

SEE ALSO: The *NetSensors* section, *Output Override Boards* section, and the *Accessories, Controller* section.

Features and Specifications

Inputs, universal
- 4 universal inputs, each of which is programmable as analog or digital
- 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
- 8-bit analog-to-digital conversion
- 0–5 volts DC analog input range
- Overvoltage input protection

Outputs, universal
- Universal outputs (3 for KMD-7301/7301C, 1 for KMD-7302/7302C), each of which is programmable as analog or digital
- Standard and custom units of measure
- Removable screw terminal block, wire size 14–22 AWG
- 0–10 volts DC for analog, 60 mA max. each output
- 0/12 volts DC for digital, 100 mA max. each
- Short-protected outputs, output current limited to 100 mA per output or 350 mA total

Outputs, triac
- Optically isolated triac output (1 for KMD-7301/7301C/7302/7302C, 2 dual-staged for KMD-7302/7302C, 4 for KMD-7401/7401C)
- Maximum switching 30 VAC at 1 A

Other features
- Programs and program parameters are stored in nonvolatile memory
- Auto restart on power failure
- EIA-485 operating up to 38.4 kilobaud
- NetSensor compatible with connection through modular jack

Installation
- Supply voltage   24 volts AC (–15%, +20%), 25 VA, Class 2
- Weight   4.5 oz. (128 g) for KMD-7302/7302C, 3.5 oz. (99 g) for the rest
- Size   8 x 3.25" (171 x 83 mm) for KMD-7302/7302C, 6.75 x 3.25" (171 x 83 mm) for the rest
- Case material   Black flame-retardant plastic

Environmental limits
- Operating   0 to 120° F (–18 to 49° C)
- Shipping   –40 to 140° F (–40 to 60° C)
- Humidity   0 to 95% RH (non-condensing)

Regulatory
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
- CE compliant

Accessories

902-602-04	Replacement three-pin removable terminal block
902-602-06	Replacement five-pin removable terminal block
883-602-17	Replacement six-pin removable terminal block
883-602-23	Replacement seven-pin removable terminal block
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-6112-40	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-40	Transformer, 120-to-24 VAC, 40 VA, single-hub

Energy and Smoke Management

H8035/H8036/H8065/H8066 Series
Networked Power Meters, Modbus and KMDigital

These innovative networked power meters are designed for real-time, single- or three-phase energy services metering in commercial and industrial applications. They combine power metering electronics and industrial grade current transformers in a single package, eliminating the need for external electronic enclosures and reducing installed components. Split-core installation eliminates the need to remove conductors, greatly reducing installation time and cost.

Up to 31 H8035/8036 Modbus meters can be connected to a KMC digital network with a KMC-5540 or KMD-1611. Up to 63 meters can be connected to a standard Modbus network. H8035/8036 models are similar to the H8035/8036 models except with KMDigital protocol instead of Modbus. Features include:

- Monitor energy parameters at multiple locations on a single EIA-485 network, greatly reducing wiring time and cost
- Fast split-core installation eliminates needing to remove conductors
- Precision metering electronics and current transformers in a single package reduces the number of installed components and labor costs
- Smart electronics eliminate CT orientation concerns, helping provide fast trouble-free installation
- System accuracy of ±1% conforms to ANSI C12.1 metering standards

Specifications

Input Primary Voltage	208–480 volts AC$_{rms}$
Phases Monitored	One to three
Frequency	50/60 Hz
Primary Current	Up to 2400 amperes per phase
Internal Isolation	2000 volts AC$_{rms}$
Insulation Class	600 volts AC$_{rms}$
Transformers	Split core, 100–2400 amperes
Environmental Limits	
• Temperature	32 to 140° F (0 to 60° C)
• Humidity	0 to 95% non-condensing
• Accuracy	±1.0% of reading from 10% to 100% of the rated CT current

Communication
- H8035/H8036   Modbus EIA-485 RTU, @ 9600 baud, connect directly to KMD-1611 or to KMDigital network with KMD-5540-005 gateway
- H8065/H8066   KMDigital subLAN, EIA-485, @ 9600 baud

Data Output
- Standard Models (H80x5)   kWh, kW
- Enhanced Models (H80x6)   26 energy variables, including kWh (consumption), kW (real power), kVAR (reactive power), kVA (apparent power), power factor, and voltage

H8035/H8036 Modbus Models

Modbus Meter Model	Enhanced Modbus Meter Model	Maximum Amps	Current Transformer Size
H8035-0100-2	H8036-0100-2	100	Small
H8035-0300-2	H8036-0300-2	300	Small
H8035-0400-3	H8036-0400-3	400	Medium
H8035-0800-3	H8036-0800-3	800	Medium
H8035-0800-4	H8036-0800-4	800	Large
H8035-1600-4	H8036-1600-4	1600	Large
H8035-2400-4	H8036-2400-4	2400	Large

H8065/H8066 KMDigital Models

KMDigital Meter Model	Enhanced KMDigital Meter Model	Maximum Amps	Current Transformer Size
H8065-0100-2	H8066-0100-2	100	Small
H8065-0300-2	H8066-0300-2	300	Small
H8065-0400-3	H8066-0400-3	400	Medium
H8065-0800-3	H8066-0800-3	800	Medium
H8065-0800-4	H8066-0800-4	800	Large
H8065-1600-4	H8066-1600-4	1600	Large
H8065-2400-4	H8066-2400-4	2400	Large
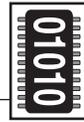
H Series
Current Sensors

Solid Core (H708)

Split Core (H904)

The H series current sensors can be used as binary or analog inputs to digital controllers for monitoring current flow. Models include those with solid cores and split cores. Some models include command relays that are triggered by an external device such as a digital controller. Features include:

- Binary normally open solid-state switches (some with adjustable trip points) or analog 0–5 VDC proportional outputs
- Split-core models eliminate the need to disconnect conductors, which greatly reduces installation time and cost
- A self-gripping iris of the split-core models may also eliminate necessity of drilling holes and screw mounting, but a removable mounting bracket is included for flexibility
- Models with a SPST command relay (H938/H950 only) can (when signaled by a digital controller) disable a circuit when a fault on the monitored circuit/device is detected
- VFD monitoring (H904), with self-adjusting trip point, monitors both frequency and amperage
- Isolation from bare conductors up to 600 VAC$_{rms}$

Models and Specifications

Model	Current Monitor Input	Output	Power	Exterior Dimensions	Sensor Hole Size
Solid-Core Models					
H708	1–135 A with adjustable trip point @ 50/60 Hz	NO digital switch, max. 1.0 A @ 30 VAC/VDC; status open/close LED	5–30 VDC constant to switch contacts	2.9 x 2.7 x 1.1"	0.75" diameter
H722	0–60 A with adjustable span @ 50/60 Hz	0–5 VDC	Self-powered (induced)	2.9 x 2.7 x 1.1"	0.75" diameter
H800	0.25–200 A with fixed 0.25 A trip point @ 50/60 Hz	NO digital switch, max. 1.0 A @ 30 VAC/VDC; status open/close LED	5–30 VDC constant to switch contacts	2.8 x 2.3 x 1.2"	0.7" diameter
Split-Core Models					
H608	1.25–50 A with adjustable trip point @ 50/60 Hz	NO digital switch, max. 1.0 A @ 30 VAC/VDC; status open/close LED	5–30 VDC constant to switch contacts	2.5 x 2.1 x 1.0"	0.6 x 0.5"
H900	1.5–200 A with fixed 1.5 A trip point @ 50/60 Hz	NO digital switch, max. 1.0 A @ 30 VAC/VDC; status open/close LED	5–30 VDC constant to switch contacts	3 x 2.8 x 1.1"	1.1 x 0.8"
H904	(VFD monitoring) 3.5–135 A @ 20–75 Hz (20–34 Hz, on/off status only; 35–75 Hz, belt-loss detection)	NO digital switch, max. 0.1 A @ 30 VAC/VDC; status open/close LED	5–30 VDC constant to switch contacts	3.0 x 2.8 x 1.1"	1.1 x 0.8"
H908	2.5–135 A with adjustable trip point @ 50/60 Hz	NO digital switch, max. 1.0 A @ 30 VAC/VDC; status open/close LED	5–30 VDC constant to switch contacts	2.9 x 2.6 x 1.1"	1.1 x 0.9"
H922	Switch selectable 0–30, 0–60, or 0–120 A @ 50/60 Hz	0–5 VDC	Self-powered (induced)	2.9 x 2.6 x 1.0"	1.1 x 0.9"
H938	2.5–135 A with adjustable trip point @ 50/60 Hz	NO digital switch, max. 1.0 A @ 30 VAC/VDC; status open/close LEDs; (relay contacts)	5–30 VDC constant to switch contacts; 24 VAC/VDC 10 mA relay coil	2.9 x 2.6 x 1.1"	1.1 x 0.9"
H950	1.5–200 A with adjustable trip point @ 50/60 Hz	NO digital switch, max. 1.0 A @ 30 VAC/VDC; status open/close LEDs; (relay contacts)	5–30 VDC constant to switch contacts; 9–12 VDC 16–20 mA relay coil	2.9 x 2.6 x 1.1"	1.1 x 0.9"

Command Relay (H938 and H950 only)

SPST Contacts	1/3 hp, 10 A resistive load (5 A inductive load) @ 250 VAC or 30 VDC
Coil	H938: 24 VAC/VDC 10 mA
	H950: 12 VDC 10 mA

Environment (All Models)

Temperature	5° to 140° F (–15° to 60° C)
Humidity	0 to 95% RH, non-condensing
Insulation Class	600 VAC$_{rms}$

KMDigital Smoke Control System (UUKL): Firefighters' Smoke Control Station

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 **eighth** edition of UL 864 (UUKL), and listing to the ninth edition is pending at the time of publication. 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 KMDigital controllers, contact KMC technical support.

KMDigital Controller Models (UL 864 Listed)

KMD-5801	BACnet controller with real-time clock
KMD-5802	BACnet controller without 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.

KMD-1611
iControl Data Collection Panel Cross-Reference

Accessories

806-620-01	Replacement plug-in transformer

NetSensors® and NetView®
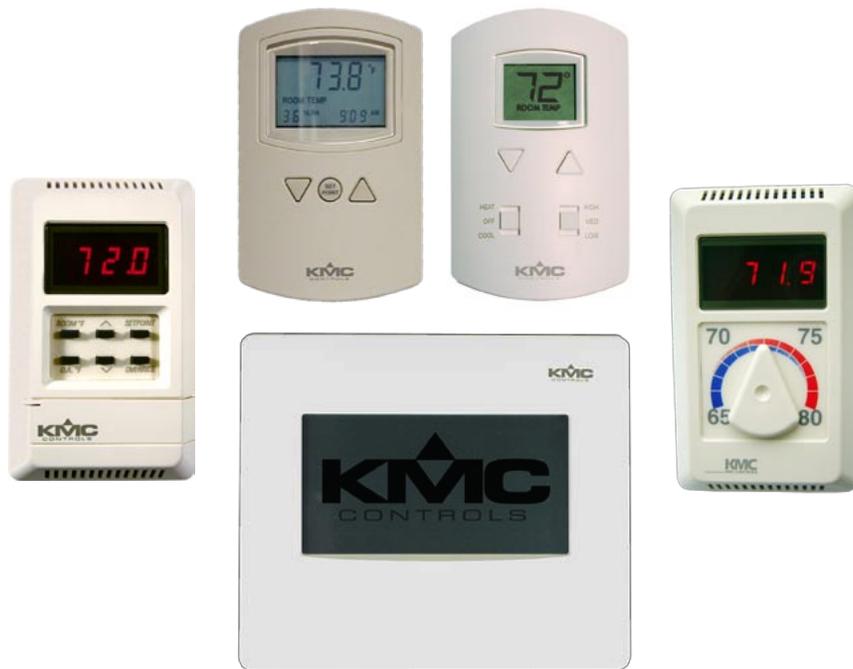
NetSensor Accessories

HDO-4000 Series
(KMD-1151/1171) NetSensor Labels, Six-Button

HDO-4001 / HDO-4001W

ROOM °F	△	SETPOINT
•	•	•
•	▽	•
O.A. °F		OVERRIDE

HDO-4002 / HDO-4002W

ROOM °F	△	SETPOINT
•	•	•
•	▽	•
O.A. °F		FAN

HDO-4003 / HDO-4003W

ROOM	△	SETPOINT
+	+	+
(1)		(2)
+	+	+
(3)	▽	(4)

HDO-4004 / HDO-4004W

ROOM °F	△	MIN 0
+	+	+
		MAX 1
+	+	+
FLOW	▽	V. FCTR

HDO-4005 / HDO-4005W

ROOM	△	SETPOINT
+	+	+
+	+	+
OUTSIDE	▽	TIME
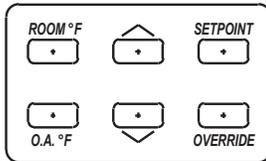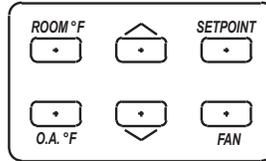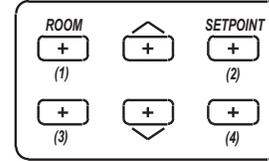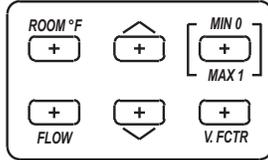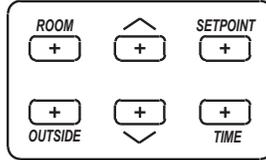
HDO-4006 / HDO-4006W

HDO-4007 / HDO-4007W

ROOM °F	△	SETPOINT
+	+	+
+	+	+
CFM	▽	OVERRIDE

HDO-4008 / HDO-4008W

1	△	2
+	+	+
+	+	+
3	▽	4
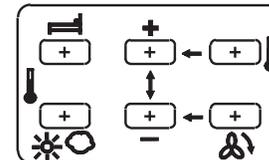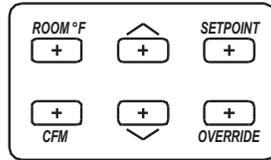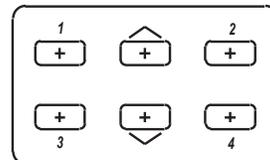
Polycarbonate adhesive backed labels in Almond or White (W). Text color is Gray (standard) or optional Black (BLK).

HDO-4100 Series
(KMD-1151/1171) NetSensor Labels, Three-Button

NOTE: Three-button labels are for under the flip-open cover)

HDO-4101

+	+	+
(5)	(6)	(7)

HDO-4102

+	+	+
MIN	C. FCTR	MAX

HDO-4103

+	+	+
5	6	RH
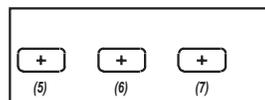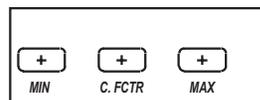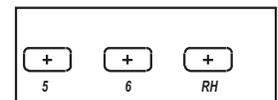
NetSensor Cables and Communication Interfaces

KMD-5559   NetSensor EIA-485 to EIA-232 CommTalk

Plenum cable with modular connectors, (NetSensor/NetView to controller):

KMD-5690	25 foot	
KMD-5691	50 foot	
KMD-5692	75 foot	

KMD-5576   NetSensor EIA-485 to USB Communicator

KMD-5624   Replacement NetSensor to CommTalk or USB Communicator cable

SEE ALSO: *Interfaces and Converters* in the *Accessories, Controller* section for more details.

NetSensor Mounting Hardware

HMO-1161   NetSensor (curved top and bottom for KMD-1160/1180 series) mounting plate allows mounting to 2 x 4" or 4 x 4" handy boxes, light almond

HMO-1161W   White

HPO-1161   Foam insulating gasket for NetSensor

HPO-0064   Replacement flip-out cover door for KMD-1151/1171 (only) NetSensors

HMO-5042   Universal (square, for KMD-1150/1170 series NetSensors) mounting plate allows mounting to 2 x 4" or 4 x 4" handy boxes, light almond

HPO-0044   Replacement NetSensor cover hex screw

HMO-5040   Replacement KMD-1150/1170 series NetSensor mounting base, vertical standard plate mounts to 2 x 4" handy-box, includes 2 hex screws

SP-001   KMC logo screwdriver with small flat blade end, 1/16" hex end, and pocket clip, useful for removing NetSensor covers

903-301-01   Replacement KMD-1160/1180 series (curved) NetSensor mounting base

NetSensors

KMD-1101/1104/1121/1124

NetSensors Replacement Cross-Reference

KMD-1101/1104/1121/1124 NetSensors are compatible only with the discontinued KMD-6000 controllers. For new installations, see the corresponding upgraded model shown in the chart at the right. If the NetSensor in an existing installation must be replaced with a newer model, the KMD-6000 controller must also be replaced.

Discontinued Model	Replacement Model
KMD-1101	KMD-1151
KMD-1121	KMD-1171
KMD-1104	KMD-1154
KMD-1124	KMD-1174

SEE ALSO: The *KMD-6xxx Controller Replacement Cross-Reference* section.

SEE ALSO: The *NetSensors Selection Guide* section in the *Reference* section.

KMD-1151/1171   (*KMDigital Only*)
(LED) NetSensors

These NetSensors are wall-mounted, temperature-sensing, programmable, operator interfaces for use in a KMC direct digital controls system. The simplicity of this design combined with its programmable functions allows for a wide variation of key assignments. They provide the following user features:

- Bright, four-character LED display with programmable on/off times for easy viewing.

- The NetSensor includes nine buttons, seven of which are user programmable, in a simple and functional design. Auxiliary wire leads provide connection for an additional digital input.

- Four-pin EIA-485 (formerly RS-485) data port on the side for easy temporary computer connection to the controller

NOTE: KMD-1151/1171s connect to BAC-5800, BAC-7000, KMD-5800, and KMD-7000 series controllers. They are not compatible with obsolete KMD-6000 series controllers.

Accessories

SEE: The *NetSensor Accessories* section.

Specifications

Display	4-character, 7-segment, red LED, 0.375 inch high
Connections	
• Connector type	6-wire modular connector to the controller
• Cable	75 feet (22.9 meters) max., 24 AWG min. conductors, plenum-rated cable recommended
• Auxiliary	Two 6-inch wire leads for auxiliary input
Power	5 volts DC supplied from controller
Mounting	Backplate mounts to a vertical standard 2 x 4 inch handy-box (4 x 4 inch handy box mounting requires HMO-5042 mounting plate)
Size	1.75 x 4.5 x 0.875 inches (44.5 x 114.3 x 22.2 mm)
Weight	2.8 ounces (80 grams)
Material	Light almond plastic

Temperature Sensor (KMD-1151)
- Type   Thermistor
- Accuracy   ±0.36° F (–0.2° C)

Temperature Sensor (KMD-1171)
- Type   CMOS
- Accuracy   ±0.5° C at 25° C ±0.9° C (0 to 40° C)
- Response Time   20 seconds or less

Humidity Sensor (KMD-1171)
- Type   CMOS
- Humidity   0–100% RH
- Accuracy   ± 3.5% RH at 25° C (20–80% RH)
- Response Time   4 seconds or less

Environmental Limits
- Operating Range 47 to 97° F (8.3 to 36.1° C)
- Humidity   0–95% RH, non-condensing
- Shipping   –40 to 140° F (–40 to 60° C)

Models

KMD-1151	Temperature Only
KMD-1171	Temperature and Humidity

SEE ALSO: The *NetSensors Selection Guide* section in the *Reference* section.

KMD-1154/1174

(*KMDigital Only*)

EasyView (LED) NetSensors

The KMD-1154/1174 EasyView NetSensors are wall-mounted, temperature-sensing, operator interfaces for use in a KMC direct digital controls system. They provide an exceptionally easy and intuitive means of reading room temperature and adjusting the setpoint. These NetSensors provide the following features:

• Bright, four-character LED display

• Large setpoint dial with blue and red temperature bars

• Auxiliary digital input port wires

• Four-pin EIA-485 (formerly RS-485) data port concealed on the back for temporary computer connection to the controller (must remove the NetSensor from the wall temporarily to access the port)

NOTE: In the KMD-1174, humidity is read continuously by the controller. The LED display can be toggled to show temperature only or to alternate between temperature and humidity.

Accessories

SEE: The *NetSensor Accessories* section.

SEE ALSO: The *NetSensors Selection Guide* section in the *Reference* section.

SEE ALSO: *BAC-10000 Series FlexStat Programmable Thermostats* in the *BACnet Controllers and Hardware* section.

Specifications

Display	4-character, 7-segment, red LED, 0.375 inch high
Connections	
• Connector type	6-wire modular connector to the controller
• Cable	75 feet (22.9 meters) max., 24 AWG min. conductors, plenum-rated cable recommended
• Auxiliary	Two 6-inch wire leads for auxiliary input
Power	5 volts DC supplied from controller
Mounting	Backplate mounts to a vertical standard 2 x 4 inch handy-box (4 x 4 inch handy box mounting requires HMO-5042 mounting plate)
Weight	2.8 ounces (80 grams)
Size	1.75 x 4.5 x 0.875 inches (44.5 x 114.3 x 22.2 mm)
Material	Light almond plastic
Temperature Sensor	
• Type	Thermistor
• Accuracy	±0.36° F (–0.2° C)
• Resistance	10,000 ohms at 77° F (25° C)
• Operating Range	47 to 97° F (8.3 to 36.1° C)
• NTC	4.37%/° C @ 25° C
Humidity Sensor	(KMD-1174 only)
• Type	Thin film polymer capacitive
• Humidity	5 to 95% RH
• Accuracy @ 25° C	±3% RH for 10 to 90% RH
• Temp. Coef.	–0.5% RH/° C
Environmental Limits	
• Operating	32 to 104° F (0 to 40° C)
• Humidity	0 to 95 % RH, non-condensing
• Shipping	–40 to 140° F (–40 to 60° C)

Models

KMD-1154-10	65 to 80° F (Temperature Only)
KMD-1154-11	18 to 27° C (Temperature Only)
KMD-1174-10	65 to 80° F (Temperature and Humidity)
KMD-1174-11	18 to 27° C (Temperature and Humidity)

NOTE: KMD-1154/1174 NetSensors connect to BAC-5800, BAC-7000, KMD-5800, and KMD-7000 series controllers. They are not compatible with obsolete KMD-6000 series controllers.

KMD-1161/1164/1181/1184

NetSensors

Setpoint Button

These NetSensors are wall-mounted, temperature-sensing, programmable operator interfaces for use in a KMC direct digital controls system. The NetSensor allows easy, direct communication with the connected controller via a local access port.

The NetSensor includes nine function keys, seven of which are programmable. The simple and functional design combined with its programmable functions allows for a wide variety of key assignments.

These NetSensors provide the following features:

• Large, four-character LCD display for easy temperature viewing, plus smaller characters for time and (if applicable) relative humidity.

• Setpoint and up/down arrow buttons accessible through cover. Six additional function buttons behind the flip-open cover.

• Seven buttons may be programmed with the controller to display or control the state of any point in the attached controller.

• Four-pin EIA-485 (formerly RS-485) data port on the underside for easy temporary computer connection to the controller.

EIA-485 Data Port
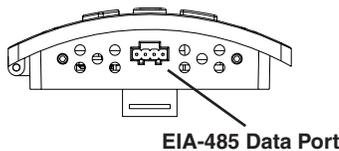
Accessories

SEE: The *NetSensor Accessories* section.

NOTE: KMD-1160/1180 series NetSensors connect to BAC-5800, BAC-7000, KMD-5800, and KMD-7000 series controllers. They are not compatible with obsolete KMD-6000 series controllers.

NOTE: The general-purpose KMD-1161/1164/1181/1184 NetSensors are most often used with controllers in networked VAV applications. The KMD-1183/1185 NetSensors are most often used with controllers in stand-alone (non-networked) systems. The KMD-1162 NetSensors are usually used with fan-coil units.

Specifications

Display	Temperature continuously updated on 0.56 inch, **four**-character, liquid crystal display; automatic backlight
Power	5 volts DC supplied from controller

Temperature Sensor (KMD-1161/1164)
• Type — 10,000 ohm thermistor
• Accuracy — ±2° F (±1.1° C)
• Operating Range — 47 to 97° F (8 to 36° C)

Temperature Sensor (KMD-1181/1184)
• Type — CMOS
• Accuracy — ±0.9° F offset (±0.5° C) from 40° to 104° F (4.4° to 40° C)
• Resolution — ±0.1° F (±0.1° C)
• Operating Range — 36 to 120° F (2.2 to 48.8° C)
• Response Time — 5 to 30 seconds

Humidity Sensor (KMD-1181/1184)
• Type — CMOS
• Humidity — 0 to 100% RH
• Accuracy — ±2% RH (10 to 90% RH) at 77° F (25° C)
• Response Time — Less than or equal to 4 seconds

Connections
• Connector type — Six-wire modular connectors to the controller
• Cable — 75 feet (22.9 meters) max., 24 AWG min. conductors, plenum-rated cable recommended

Mounting	Backplate mounts to a vertical standard 2 x 4 inch handy-box (4 x 4 inch handy box mounting requires HMO-1161 mounting plate)
Weight	2.8 ounces (80 grams)
Material	Light almond or white plastic

Environmental Limits
• Operating — 34 to 125° F (1.1 to 51.6° C)
• Humidity — 0 to 95 % RH, non-condensing
• Shipping — –40 to 140° F (–40 to 60° C)

Models

Temperature Only

KMD-1161	Almond
KMD-1161W	White
KMD-1164	Almond
KMD-1164W	White

Temperature and Humidity

KMD-1181	Almond
KMD-1181W	White
KMD-1184	Almond
KMD-1184W	White

KMD-1161/1181   **KMD-1164**   **KMD-1184**
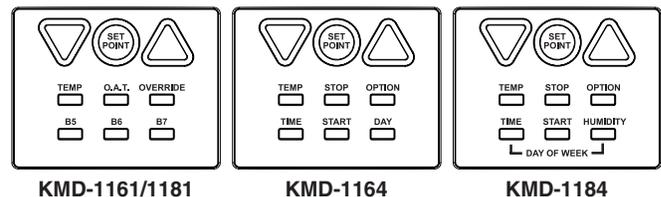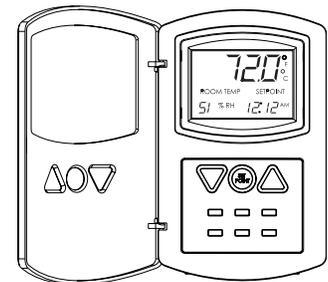
SEE ALSO: The *NetSensors Selection Guide* section in the *Reference* section.

KMD-1162

Hospitality NetSensor (FCU)

Slide Switches

This is a wall-mounted, temperature-sensing, programmable operator interface for use in a KMC direct digital controls system. It includes intuitive-to-use setpoint buttons, and two **slide switches for heating/cooling change over and fan speed**. (Humidity is not sensed or displayed, and it does not have a hinged cover.) Four-pin EIA-485 (formerly RS-485) data port on the underside for easy temporary computer connection to the controller.

Accessories

SEE: The *NetSensor Accessories* section.

Specifications

Display	Temperature continuously updated on 0.56 inch, **two**-character, liquid crystal display; automatic backlight
Power	5 volts DC supplied from controller

Temperature Sensor
- Type — 10,000 ohm thermistor
- Accuracy — ±2° F (±1.1° C)
- Operating Range — 47 to 97° F (8 to 36° C)

Connections
- Connector type — Six-wire modular connectors to the controller
- Cable — 75 feet (22.9 meters) max., 24 AWG min. conductors, plenum-rated cable recommended

Mounting	Backplate mounts to a vertical standard 2 x 4 inch handy-box (4 x 4 inch handy box mounting requires HMO-1161 mounting plate)
Weight	2.8 ounces (80 grams)
Material	Light almond or white plastic

Environmental Limits
- Operating — 34 to 125° F (1.1 to 51.6° C)
- Humidity — 0 to 95 % RH, non-condensing
- Shipping — –40 to 140° F (–40 to 60° C)

Models

KMD-1162	Almond
KMD-1162W	White

KMD-1183/1185

NetSensors
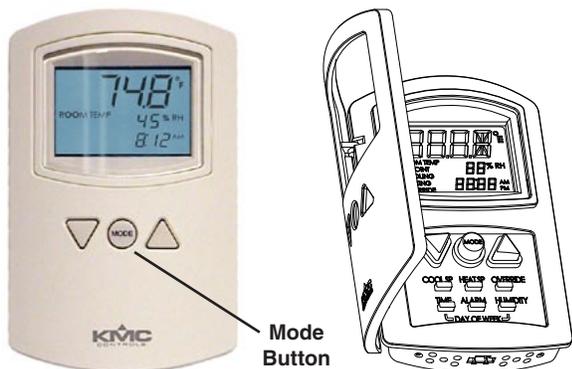
Mode Button

This is a temperature/humidity-sensing, wall-mounted, programmable operator interface for use in a KMC direct digital controls system. The NetSensor allows easy, direct communication with the connected controller via a local access port. Three of its nine function keys can be reassigned by the user.

Compared to the KMD-1161/1164/1181/1184, the KMD-1183/1185 has many similar features except that it has different button functions/labels:

- The center **Mode** button allows easy cycling between display/ set options for room temperature, cooling setpoint, heating setpoint, and override.

- Flipping open the cover allows access to six function buttons: **Cooling Setpoint**, **Heating Setpoint**, **Override**, **Time***, **Alarm***, **Humidity***, and (two buttons pressed together) **Day of Week***. (*Three buttons and a fourth combination of buttons may be reassigned and programmed with the controller to display or control the state of any point in the attached controller.)

Specifications

Temperature Sensor
- Type — CMOS
- Accuracy — ±0.9° F offset (±0.5° C) from 40° to 104° F (4.4° to 40° C)
- Resolution — ±0.1° F (±0.1° C)
- Operating Range — 36 to 120° F (2.2 to 48.8° C)
- Response Time — 5 to 30 seconds

Humidity Sensor
- Type — CMOS
- Humidity — 0 to 100% RH
- Accuracy — ±2% RH (10 to 90% RH) at 77° F (25° C)
- Response Time — Less than or equal to 4 sec.

Models and Alarm Handling

The only difference between the KMD-1183 and the KMD-1185 is how each NetSensor handles an alarm state signalled by the connected controller. The difference is described in the chart below.

State	KMD-1183	KMD-1185
Alarm	Display shows room temperature. When Button 6 (ALARM) is pressed, "**ON**" is momentarily displayed.	Display shows flashing "**ALM**" (alternates with room temperature display). Pressing Button 6 suppresses "ALM" indication for 10 minutes, and if Button 6 is pressed again during the 10 minute suppression period, "ALM" shows momentarily. When "ALM" is flashing, if any button other than 6 is pressed, the display momentarily returns to the normal display corresponding to that button.
No Alarm	Display shows room temperature. When Button 6 is pressed, "**OFF**" is momentarily displayed.	

NetView

KMD-1002
NetView

(*KMDigital Only*)

The KMD-1002 NetView is an operator interface designed for viewing and controlling a KMC Tier 2 (sub LAN) network. The 4.9 x 2.5" LCD touch screen with blue backlighting provides crisp, easy-to-view access to a direct digital network without a computer or special programming. Based on password permissions stored in the network controllers, the following can be viewed and changed with a KMC NetView:

- Time and date
- Weekly schedules
- Annual schedules
- System groups (text only)
- Inputs
- Outputs
- Setpoints/Variables
- Alarm reporting
- Trend/Run Time Log Data (text Only)

Accessories

Plenum cable with modular connectors
(NetSensor/NetView to controller):

KMD-5690	25 foot
KMD-5691	50 foot
KMD-5692	75 foot

HPO-0068	Plug-in transformer for KMD-1002 NetView

HMO-4540	Panel mounting bracket and screws for mounting the KMD-1002 NetView in a 6.81 x 5.81 inch panel cutout (not needed for surface mounting)

Specifications

Dimensions	7.19 x 6.19 in. (482.6 x 157.2 mm)
Display	
• Type	LCD touch panel
• Character size	5 x 8 pixels
• Screen size	42 characters by 16 rows, 256 x 128 pixels
• Viewing area	2.56 x 4.9 in. (124.5 x 65.0 mm)
Communications	KMC Tier 2 EIA-485 (2400 to 38400 auto baud detection), max. one NetView per Tier 2 network
Connections	
• Network	Female modular jack
• Power	Screw terminals
Power	24 VAC, 20 VA, HPO-0068 recommended
Weight	18.1 ounces (513 grams)
Mounting	
• Surface	Backplate mounts to 2 x 4 inch or 4 x 4 inch standard electrical handy-box or any flat surface.
• Panel	Optional brackets mount the NetView in 6.81 x 5.81 inch cutout.
Material	Light almond ABS
Regulatory	
• UL 916 Energy Management Equipment listed	
• FCC Class B, Part 15, Subpart B	
• CE mark	
Environmental limits	
• Operating	32 to 120° F (0 to 49° C)
• Shipping	–40 to 140° F (–40 to 60° C)
• Humidity	0 to 95% relative humidity (non-condensing)

KMD-7311/7312 Attain Cross-Reference

NOTE: The former KMD-7311/7312 Attain package included:

- NetView (KMD-1002) w/ transformer (HPO-0068)
- 4 x 4 controller (KMD-7301C for AHU applications or KMD-7302C for RTU) with transformer (XEE-6111-040)
- 75-foot plenum cable (KMD-5692)
- Wall sensor (STE-5012) and vertical and horizontal mounting plates (HMO-5036/5039)

These components are still available separately.

> **SEE ALSO:** *BAC-10000 Series FlexStat Programmable Thermostats* in the *BACnet Controllers and Hardware* section.
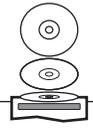
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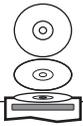
BAC-5000   (*BACnet Only*)

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.

Computer System Requirements		
Component	**Windows 2000, Windows XP**	**Vista Business, Vista Enterprise**
Processor	300 MHz or faster Pentium III or equivalent	2 GHz or faster Pentium 4 or equivalent
Memory	512 MB RAM or greater	2 GB RAM or greater
Hard drive	100 MB or more space available after installation	
Monitor	SVGA with minimum 800 x 600 resolution	
Drive	CD-ROM for installation	
Network connection	Ethernet 10baseT connection	
PC to MS/TP connection	Serial port with KMD-5559 or USB port with third-party EIA-485 converter	
License key	USB port dedicated to hardware key	
Sound	Sound card/speakers required for audible alarm notification	

Accessories

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

Features and Specifications

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 8802-3
- Ethernet IP
- Register as foreign device to a BBMD (BACnet broadcast management device)
- PTP including modem

KMD-5201/5202

LAN Controller BACnet 802.3 and MS/TP Upgrades

Models	
KMD-5201	LAN Controller BACnet 802.3 upgrade
KMD-5202	LAN Controller BACnet MS/TP upgrade

These upgrades add a BACnet 802.3 interface or BACnet MS/TP interface to a standard KMD-5210 LAN Controller. Contact KMC Controls Customer Service for assistance.

NOTE: Requires a KMD-5696/5698 flash upgrade kit to install.

Accessories	
KMD-5696	Parallel port, flash upgrade kit
KMD-5698	USB port, flash upgrade kit

SEE ALSO: The *KMD-5210 Series* section.

KMD-5779

OPC Server

The KMD-5779 brings plug-and-play software compatibility between KMC Controls digital networks and third-party applications. It is a software package that bridges between a KMC digital system and other OPC-based client applications. It converts data from points in KMC direct digital controllers into the OPC format and makes the data available to any OPC client such as a SCADA program or applications written in Visual Basic. OPC (OLE Process Control) is a worldwide standard that defines data exchange within a Windows environment. The OPC standard is administered by the OPC Foundation, an independent organization that adapts and creates specifications that fill industry-specific needs. The KMD-5779 features:

- Support for multiple OPC clients, and support for Data Access 1.0a and 2.0x OPC clients
- Supports all parameters of all KMC controller point types
- Imports and exports CSV files for easy setup in spreadsheet or database applications
- Remote tag browsing from OPC clients
- Device simulation for off-line data testing
- High-speed multi-threaded application
- Support for custom scaling of analog signals
- OPC Automation Interface included for Visual Basic

Specifications

Operating Systems

- Windows 95 and 98 with DCOM (Distributed Component Object Model)
- Windows 2000, Windows XP, and Windows NT with service pack 3.0 or higher

Computer Hardware

- Intel Pentium® processor or equivalent
- 128 MB RAM
- 100 MB of hard drive space available after operating system installation
- A CD-ROM drive
- Serial port COM1–COM9 or Ethernet connection

Controller support

- All KMD series controllers, including KMD-5100 series Multinet controllers
- Ethernet, serial port, or modem connection for Tier 1 controllers
- Serial port connection for Tier 2 controllers (requires KMD-5559 CommTalk)

Installation

- Easy installation from compact disc
- The OPC Server is self-registering

Accessories	
KMD-5559	CommTalk Communications Interface

OSA-5000/5500 Series

Acuity and Acuity B-OWS Cross-Reference

SEE: *TotalControl–Building Services Building Automation Software* and *TotalControl–Design Studio Master Operator Software* sections for new installations.
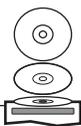
KMD-5791

(*KMDigital Only*)

WinControl® XL Plus

WinControl® is the deluxe facilities management software for programming and monitoring KMC digital networks. WinControl is a versatile, easy-to-use control program that greatly simplifies building automation processes, and operators have complete control of temperature, humidity, overrides, status, alarms, and logs.

- Build user-friendly custom graphic interfaces
- Display, save, and export system performance data
- Schedule for holidays and special events
- Monitor and change system performance from remote locations
- Alert operators to alarms and special conditions
- Extensive libraries of custom graphics for chillers, boilers, roof top units, air handles, and more (see sample screen above)
- Automated controls package to change settings or display parameters.

Models

KMD-5791	WinControl XL Plus
KMD-5792	*WinControl XL—no longer available, see KMD-5791*
HW-KEY	KMC Controls hardware license key

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

Computer System Requirements		
Component	**Windows 2000, Windows XP**	**Vista Business, Vista Enterprise**
Processor	300 MHz or faster Pentium III or equivalent	2 GHz or faster Pentium 4 or equivalent
Memory	512 MB RAM or greater	2 GB RAM or greater
Hard drive	100 MB or more space available after installation	
Monitor	SVGA with minimum 800 x 600 resolution	
Drive	CD-ROM for installation	
Network connection	Ethernet 10BaseT connection	
PC to MS/TP connection	Serial port with KMD-5559 or USB port with KMD-5576	
License key	USB port dedicated to hardware key	
Sound	Sound card/speakers required for audible alarm notification	

Accessories

KMD-5559	CommTalk Communications Interface
KMD-5576	USB to EIA-485 Communicator
SP-022	Digital Designer's Guide

Features and Specifications

Easy Programming

- Worksheet style entry and drop-down list boxes makes programming quick and easy
- Identify inputs, outputs, and other functions with easy to remember descriptions and labels
- Assign standard units of measure for both analog and digital functions or create custom units
- Add automation with KMC Control Basic, a variation of a popular and easy to learn programming language
- Replace complex calculations and nonlinear functions with simple to enter lookup tables
- Tune controls with designed-in PID control loops

Security

- Security locks out tampering and still permits authorized operators to make system changes
- Password protection for multiple users prevents unauthorized access
- Six levels of security provides exactly the level of control required for each authorized user
- Confirm operator access with operator and sign-on logs

Custom graphic interfaces

- Design and construct operator-friendly graphic interfaces
- Use graphics from any program that generates BMP, JPG, GIF, WMF, or EMF file types
- Add motion and proportional positioning displays with animation files
- Use the extensive graphic libraries to build custom graphics for chillers, boilers, roof top units, air handlers, and more
- Use the automated controls package to change settings or display parameters

Manage alarms

- Program, view, and acknowledge alarms
- Send messages to printers, pagers, telephones (including cellular), and even email
- Hear voice alarms alert you about special conditions
- Acknowledge alarms or retrieve them from the hard disk for future reference

Data logging

- Retrieve and view temperature and other performance data stored in each controller or save it to disk for detailed analysis
- Exports data to Microsoft® Excel, comma-separated values (CSV), or hypertext markup language (HTM) files
- No dedicated computer required for short-term recording; controllers store data until retrieved by an operator
- Verify actual system performance with trend logs
- Capture equipment duty cycle with runtime logs

Scheduling

- Schedule special holidays, maintenance schedules, and special days for up to a full year
- Schedule recurring daily activities with weekly schedules
- Use annual schedules to override weekly schedules during holidays and special events
- Confirm operator access with operator activity logs

Connectivity

- Use existing Ethernet for system-wide access
- Connect directly to any controller through a standard USB or serial port
- Remote access with a modem from anywhere you can connect to a telephone line
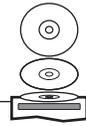
TC Series

TotalControl–Building Services Building Automation Software
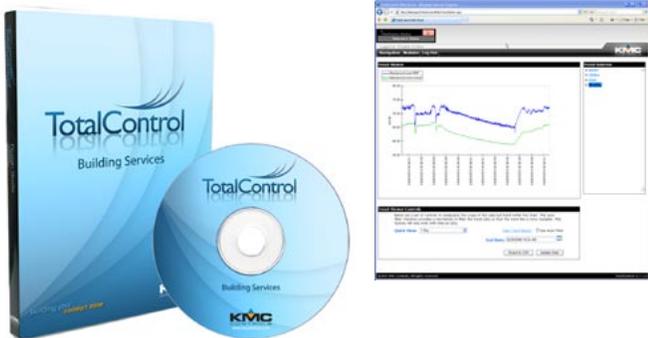
The **TotalControl suite of programs** includes:

- **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 next page)

- **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 components include: Trend Service, Notification Service, Schedule Service, System Monitor Engine, SQL Server 2005 Express Database, Web Monitor and Control, and Protocol Driver Service.

Building Services collects, stores, and routes data between a building automation network and an operator interface or workstation. Built on XML and Microsoft.Net, this program is just one part of a new and powerful suite of software tools from KMC Controls.

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 supports the the configuration of controllers operating on BACnet and KMDigital, as well as (pending) MODBUS and OPC.

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.

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.

Computer System Requirements		
Component	**Recommended**	**Minimum**
Operating system	Windows 2003 Server SP1	Windows XP Pro SP2 (limited user connections)
Processor	Pentium 4 or equivalent	Pentium III
Processor speed	2 GHz or faster	1 GHz
RAM memory	2 GB or greater	1 GB
Hard disk space	160 GB 5 GB free	80 GB 5 GB free
Monitor	SVGA 1280 x 1024	SVGA 1024 x 768
Optical drive	CD/DVD-RW	CD-ROM
Network connection	Ethernet 100BaseT	
Web browser	Internet Explorer 6.0 or later	
Internet connection	DSL, cable modem, or direct connection	
Databases Supported	Microsoft SQL Server 2005 Workgroup, Standard, or Enterprise	Micrsoft SQL Server 2005 Express for systems with no more than 300 controllers (supplied with TotalControl)
USB port	USB port dedicated to hardware key	

Models

TC-BAC	Building Services BACnet Driver—includes single web seat and 10 controllers (requires HW-KEY)
TC-BACADD50	Building Services—add 50 BACnet controllers to a site with TC-BAC (requires TC-BAC)
TC-BACUNL	Building Services—unlimited BACnet controllers (requires TC-BAC)
TC-KMD	Building Services KMDigital Driver—includes single web seat and 10 KMD controllers (requires HW-KEY)
TC-KMDADD50	Building Services—add 50 KMDigital controllers to a site with TC-KMD (requires TC-KMD)
TC-KMDUNL	Building Services—unlimited KMDigital controllers (requires TC-KMD)
TC-WEB1ADD	Web Monitor and Control (one additional concurrent seat)
HW-KEY	KMC Controls Hardware License Key—the hardware license key ("dongle") requires a dedicated USB port, and the job site name is required at time of order*

*NOTE: The number of concurrent user connections to the web portal is controlled by license. The hardware license key for web access is connected to the computer with the system monitor engine.
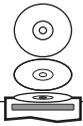
TC Series
TotalControl–Design Studio Master Operator Software

TotalControl Design Studio is the master operator workstation software for configuring a building automation system. Built on XML and Microsoft.Net, this program is just one part of a new and powerful suite of software tools from KMC Controls. 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 (pending) MODBUS and 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

Computer System Requirements		
Component	**Recommended**	**Minimum**
Operating system	Windows 2003 Server SP1, Windows XP Pro SP2	Windows XP Pro SP2
Processor	Pentium 4 or equivalent	Pentium III
Processor speed	2 GHz or faster	1 GHz
RAM memory	2 GB or greater	1 GB
Hard disk space	160 GB 5 GB free	80 GB 5 GB free
Monitor	SVGA 1280 x 1024	SVGA 1024 x 768
Optical drive	CD/DVD-RW	CD-ROM
Network connection	Ethernet 100BaseT	Ethernet 100BaseT
Web browser	Internet Explorer 6.0 or later	
Internet connection	DSL, cable modem, or direct connection	
USB port	USB port dedicated to hardware key	

Models

TC-STUDIO	Design Studio engineering tool*
HW-KEY	KMC Controls hardware license key ("dongle")

*NOTE: Each copy of Design Studio is licensed to end-users for use on one computer at a time. Order a hardware license key for each copy of Design Studio (job site name required at time of order). The hardware license key requires a dedicated USB port.

Reference

Abbreviations, Codes, and Definitions

Acronyms and Abbreviations

Common acronyms and abbreviations in this catalog include:

@ = at

° = degrees

Ω = ohms

amp = amperes

A = amperes

AAC = Advanced Application Controller

A/C = air conditioning

ABS = acrylonitrile butadiene styrene (plastic)

AC = alternating current

AHU = air handling unit

avg. = average

AWG = American Wire Gauge

BACnet = Building Automation Control network

BTL = BACnet Testing Laboratories

C = Celsius

cfh = cubic feet per hour

cfm = cubic feet per minute

cm = centimeters

CSA = Canadian Standards Association

CT = current transducer

CUL = (UL certification to CSA requirements)

D-sub connector = D-type subminiature connector

DA = direct acting

DC = direct current

DPDT = double pole double throw

DPST = double pole single throw

EIA = Electronic Industries Alliance

EOL = end of line

ETL = Electrical Testing Laboratories

F = Fahrenheit

FACP = Fire Alarm Control Panel

FCU = Fan Coil Unit

FIU = Fan Induction Unit

ft-lbs. = foot pounds

FSCS = Firefighters' Smoke Control Station

g = grams

hp = horsepower

HPU = Heat Pump Unit

HVAC = heating ventilating and air conditioning

Hz = hertz

in-lbs. = inch pounds

IP = Internet protocol

kbps = kilobits per second

kW = kilowatt

kWh = kilowatt-hour

KMDigital = KMC Digital

kPa = kilopascals

LCD = liquid crystal display

LED = light emitting diode

m = meters

mA = milliamperes

µs = microsecond

MAC = media access control

max. = maximum

min. = minimum

mm = millimeters

MS/TP = master-slave/token-passing

NC = normally closed

NEMA = National Electrical Manufacturers Association

NO = normally open

NPT = National Pipe Thread

N•m = Newton meters

OLE = Object Linking and Embedding

OPC = OLE for Process Control

OSA = Open System Architecture (i.e., BACnet)

pF = picofarad

PWM = pulse width modulation

RA = reverse acting

RH = relative humidity

RS = Recommended Standard

RTC = real time clock

RTU = Roof Top Unit

SPDT = single pole double throw

SPST = single pole single throw

UL = Underwriters Laboratories

USB = universal serial bus

UUKL = (a UL category for smoke control devices)

V = volts

VA = volt-ampere

VAC = volts alternating current

VAV = variable air volume

VDC = volts direct current

W = watts

NOTE: See also the **KMC Controls Condensed Catalog (Electronic and Pneumatic Controls)** for additional acronyms relating to those products. See also the **Green Buildings Controls Glossary** for definitions of various terms in this catalog.
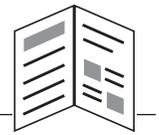
Definitions of Terms

For **definitions** of various terms in this catalog, refer to the pocket-sized **Green Buildings Controls Glossary (SB-046)**. The goal of this glossary is to provide a common ground of understanding of various terms relating to aspects of green buildings. It lists **three types of related terms**:

• General terms relating to much of the **green building industry**

• Terms specifically relating to **indoor environmental quality** and **energy management**

• Terms relating to **HVAC and building automation systems**

A hyperlinked online version can be downloaded from the Brochures section of KMC Controls web site, **www.kmccontrols.com. Some of the more important glossary terms for using this catalog are included on this page:**

Air Handling Unit (AHU)—An HVAC system component that conditions and delivers air through the system. It typically contains one or more supply and return fans, heating/cooling coils, and filters to condition the air.

BACnet® (Building Automation Control Network)—An interoperable, nonproprietary, communication protocol standard conceived by a consortium of building managers, system users, and manufacturers. BACnet defines how information is packaged for transportation between building automation system vendors.

Direct Digital Control (DDC)—A microprocessor-based device or network of devices that controls a system or process such as an HVAC system. It may be a proprietary system or an open system, such as BACnet.

EIA-232—A serial communications standard that provides asynchronous communication capabilities, typically using 9-pin and/or 25-pin connectors. For personal computers, such connections are being superseded by USB. It was formerly known as RS-232.

EIA-485—A serial communications standard in which the voltage difference between two wires conveys the data. It is commonly used to network controllers via twisted-pair wiring. It was formerly known as RS-485.

Fan Coil Unit (FCU)—A fan terminal unit that conditions the air in a single room or zone. FCUs generally contain heating and cooling coils and have the ability to supply outside air to a space.

Heat Pump Unit (HPU)—A unit that uses direct expansion to remove or add heat to a space. On a call for heat, the heat pump pulls heat from a source such as outside air or the ground and puts it into a space. On a call for cooling, the process is reversed.

KMDigital®—A KMC proprietary DDC network product line. Certain KMDigital models can serve as "gateways" to BACnet networks, and KMC also offers a BACnet product line.

LAN (Local Area Network)—A collection of interconnected equipment that can share data, applications, and resources.

MS/TP (Master Slave/Token Passing)—A protocol (using the EIA-485 signaling standard) in which master devices can initiate requests for data but slave devices cannot (since slaves can only reply to messages from other devices). KMC advanced application controllers are all MS/TP master devices.

Native BACnet Device—A device that is fully BACnet compatible and uses BACnet as its primary, if not exclusive, method of communication.

Open System—(1) An architecture with specifications that are public. (2) A building automation platform, such as BACnet, that allows components from different manufacturers to share information and work together.

PC (Personal Computer)—A microcomputer with price, size, and capabilities that make it suitable for personal usage. Common usage today indicates an IBM PC compatible that uses a Microsoft® Windows® operating system.

PID (Proportional Integral Derivative) Control—A control algorithm that enhances the PI control algorithm by adding a component that is proportional to the rate of change (derivative) of the deviation of the controlled variable. This compensates for system dynamics and allows faster control response.

PID Loop Controller—A controller with an algorithm that calculates an output value that is based on the sensed value and the required setpoint. PID loop controllers provide more accurate and stable control than simpler controllers.

Proportional Control—(1) A control algorithm or method in which the final control element moves to a position proportional to the deviation of the value of the controlled variable from the setpoint. (2) A type of control in which a controlled device may operate at any position between fully closed to fully open. Within a specific range, the output response maintains a constant ratio to the input signal.

Proprietary—A protocol, standard, property, or design that an individual or organization uses, produces, or markets under exclusive legal rights. Proprietary systems may offer higher performance and richer features than open systems that must adhere to strict interoperable requirements.

Protocol—A definition or set of communication rules by which information is exchanged between devices on a network.

Real Time Clock (RTC)—A device that keeps track of the current time in a controller even if power is interrupted for a period of time.

Relative Humidity (RH)—The ratio of the amount of water vapor in air to the maximum amount of water vapor that could be in the air if the vapor were at its saturation conditions.

Roof Top Unit (RTU)—An HVAC unit that is supplied as a package and installed outside of a building.

Router—A device that connects two or more networks and chooses the best path for data packets.

Tier 1 Controller—In KMC digital automation controls, a LAN controller that can have one or more Tier 2 networks connected to it. A Tier 1 controller may also have ports for connections to a computer, modem, or other equipment.

Tier 2 Controller—In KMC digital automation controls, a "Subnet" or "Sub-LAN" controller, which has built-in, peer-to-peer, EIA-485 network communications.

Triac (TRIode for Alternating Current)—An electronic component used for controlling AC circuits.

USB (Universal Serial Bus)—A versatile, popular, plug-and-play, high-speed, serial computer interface.

Variable Air Volume (VAV)—A method of temperature control in which the volume of constant temperature supply air exiting a duct is modulated (via dampers) to maintain a temperature setpoint in an individual space.

KMC Model Number Meanings

Electronic and Pneumatic Products

BIO-xxxx

Basic Device Type	Input Variable	Output Variable
C = Controller	**A** = Ambient Air Contaminants	**B** = Ball (Valve)
H = *Hardware (see below)**	**C** = Control Air	**C** = Control Air
I = Indicator	**E** = Electrical	**E** = Electrical
M = Motor (Actuator)	**F** = Force	**G** = Globe (Valve)
R = Relay	**H** = Humidity	**I** = Indication
S = Sensor	**L** = Light	**P** = Position
T = Transmitter	**M** = Movement (Position)	**S** = Static
V = Valve	**P** = Pressure	**T** = Thermal
X = Converter	**S** = Static	**V** = Pressure Independent (Valve)
S = Selector	**T** = Temperature	

*Hardware
HAO = Air Accessories (Compressors, Dryers, Filters, Regulators)
HCO = Cabinets, Panels, Utility Boxes
HDO = Dials, Receiver Gauge Scales
HFO = Fittings
HLO = Linkage
HMO = Mounting
HPO = Parts (Replacements, Assemblies, Spares)
HRO = Restrictors
HSO = Supplies (Tubing, Wire, Solder, Tape, Grease)
HTO = Tools, Gauges, Thermometers, Test Panels
VTD = Actuator parts

Digital Products
BAC = BACnet devices and software
L# = KMC Lighting devices
H# = Current sensors
KMD = KMDigital devices and software
TC = TotalControl software
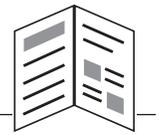
Product Date Code Location and Interpretation

Every KMC product has a label with a coded manufacture date. Replacement parts for some products will depend on the manufacture date. The date code is part of the basic information customers may be asked to provide when contacting KMC's sales and technical support representatives. The label style, placement, and code format changed in 2003.

Products manufactured **BEFORE March of 2003** have bright red/orange (electronic and digital), white (pneumatic) or light blue (system powered) labels. The labels were placed on the outside housing of electronic and pneumatic products. Digital product labels were typically placed on the front or back of the circuit board.

On the label, the KMC part number is located at the top with the manufacture date code at the bottom. The first two digits of the code are the last two digits of the year, the second two digits are the week. The upper label is from a KMD-5210 LAN Controller manufactured in the 49th week of 2001.

Products manufactured **AFTER March of 2003** have silver/gray labels located on the front or side of the unit housing.

On the label, the KMC part number is located in the middle, between the top and bottom bar codes. The manufacture date code is centered on the left side of the label. The first two digits of the code are the last two digits of the year and the last three digits are the day. The lower label is from a KMD-5210 LAN Controller manufactured on the 238th day of 2003 (August 26, 2003).
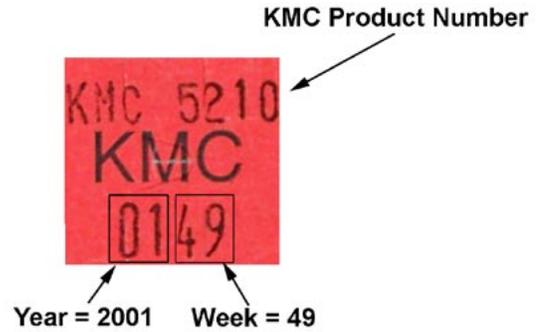
Label Before March 2003
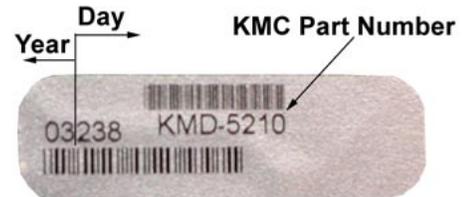
Label After March 2003

BACnet Controller Selection Guide

Model with RTC*	BAC-5801*	BAC-5831*			BAC-7301C*	BAC-7302C*	BAC-7303C*
Model without RTC	BAC-5802		BAC-7001 BAC-7051	BAC-7003 BAC-7053	BAC-7301	BAC-7302	BAC-7303
Description	8 x 8	16 x 12	(4 x 4) VAV	(4 x 4) VAV Fan Induction	4 x 4 AHU	4 x 4 RTU	4 x 4 FCU
BACnet Device Type	B-AAC	B-AAC	B-AAC	B-AAC	B-AAC	B-AAC	B-AAC
Inputs (Analog, Binary, or Accumulator)	8	16	4***	4***	4	4	4
Max. # of Accumulator Objects	3	3	3	3	3	3	3
Outputs (Analog or Binary)	8	12	4***	4***	4***	4***	4***
Binary Value Objects	40	40	40	40	40	40	40
Analog Value Objects	40	40	40	40	40	40	40
Multi-state Value Objects	0	0	0	0	0	0	0
PID Loop Objects	8	10	4	4	4	4	4
System Groups	N/A, part of software						
Schedule Objects	8	8	8	8	8	8	8
Calendar Objects	3	3	3	3	3	3	3
Event Enrollment Objects	0	0	0	0	0	0	0
Program Objects (Control Basic)	10	10	10	10	10	10	10
Program Size (Each)	2.8K bytes	2.8K bytes	2.8K bytes	2.8K bytes	2.8K bytes	2.8K bytes	2.8K bytes
Tables (User Defined)	5 for devices/inputs, 3 for Control Basic						
Trend Objects	8	8	8	Yes	Yes	8	8
Notification Class Objects	8	8	8	8	8	8	8
Create and Delete Objects	No	No	No	No	No	No	No
Segmentation	No	No	No	No	No	No	No
Passwords	N/A, part of software						
Custom Units (D or A)	No	No	No	No	No	No	No
Connections/Ports							
EIA-485 (Terminals)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NetSensor (Modular EIA-485)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethernet	No	No	No	No	No	No	No
EIA-232 (Terminals)	No	No	No	No	No	No	No
EIA-232 (9-pin D-sub)	No	No	No	No	No	No	No
Modem (Through EIA-232 Port)	No	No	No	No	No	No	No
Write to Flash	Immediately after cold start...and 5 minutes after last write or configuration change						
Bit Architecture							
Processor	16	16	16	16	16	16	16
Input A/D	10	10	10	10	10	10	10
Output D/A	8	8	8	8	8	8	8
Pulse Counting	16 Hz	16 Hz	16 Hz	16 Hz	16 Hz	16 Hz	16 Hz
Transfer Points (total)	Up to network designer to limit the number of points as necessary to maintain network performance						
Other Notes and Comments			***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	***RTU, outputs = 1 universal, 1 triac, 2 staged triacs	***FCU, outputs = 2 universal, 1 triac, 1 staged triac

*After up to 72 hours of power outage, the Real Time Clock automatically resets the system time upon power restoration.

(See individual data sheets for additional product details.)
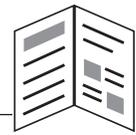
BAC-7401C*	BAC-A1616BC*	BAC-A1616BC*		*Others*	*BAC-5050**
BAC-7401			**CAN-A1618EIO**	*BAC-10000 Series FlexStat and KMC Lighting*	
4 x 4 HPU	**16 x 16 Building Controller**	**16 x 16 Building Controller**	**16 x 8 I/O Expansion Module**		*Router*
B-AAC	B-BC	B-BC	N/A		*N/A*
4	16***	16***	16		*N/A*
3	16***	16***	16		*N/A*
4***	16***	16***	8		*N/A*
40	100 default, up to 1,000	100 default, up to 1,000	N/A		*N/A*
40	100 default, up to 1,000	100 default, up to 1,000	N/A		*N/A*
0	10, up to 256	10, up to 256	N/A		*N/A*
4	16 default, up to 32	16 default, up to 32	N/A		*N/A*
					N/A
8	10, up to 100	10, up to 100	N/A		*N/A*
3	10, up to 32	10, up to 32	N/A		*N/A*
0	10, up to 512	10, up to 512	N/A		*N/A*
10	32	32	N/A		*N/A*
2.8K bytes	25K bytes	25K bytes	N/A		*N/A*
	16 for inputs, 8 for Control Basic	16 for inputs, 8 for Control Basic	N/A	*Consult Product Data Sheets*	*N/A*
8	64, up to 256	64, up to 256	N/A		*N/A*
8	10, up to 128	10, up to 128	N/A		*N/A*
No	Yes	Yes	Yes		*N/A*
No	Yes	Yes	N/A		*N/A*
					N/A
No	Yes	Yes	Yes		*N/A*
Yes	2 ports	2 ports	No		*4 ports*
Yes	No	No	No		*No*
No	Yes	Yes	No		*Yes*
No	2	2	No		*2*
No	1	1	No		*1 (shared)*
No	Yes	Yes	No		*Yes*
...and **2** min. after last write or config change					*At config. changes & startup*
16	32	32	32		*32*
10	16	16	16		*N/A*
8	12	12	12		*N/A*
16 Hz	16 Hz	16 Hz	16 Hz		*N/A*
					N/A
***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	***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; routes BACnet traffic but is not a BACnet device;*

NOTE: This chart can also be downloaded as a separate file from the Product Selection Tools section of KMC Controls web site, **www.kmccontrols.com.**

SEE ALSO: The *BACnet Controllers and Hardware* section.

KMDigital Controller Selection Guide

Current Controller Model w/ RTC*	KMD-5210*	KMD-5205*	KMD-5270*	KMD-5801*		KMD-5831*
Current Controller without RTC				KMD-5802		
BACnet Equivalent				*Yes*		*Yes*
*Obsolete/Legacy Controller***	*KMD-5110* KMD-5111*			*5501/5504* 5502/5505*	*KMD-5821*	
Description	LAN Controller	LANLite (8x8)	WebLite (8x8)	PLC-16 (8x8)	PLC-16+ (8x8)	PLC-28 (16x12)
Tier Type	T1	T1	T1	T2	T2	T2
Inputs (Extended Points)***	Up to 128 I/Os	8	8	8	8	16 (9-16)***
Outputs (Extended Points)	Up to 128 I/Os	8	8	8	8	12 (9-12)
Variables (Ext. Points)	256	128	128	64 (33-64)	64 (33-64)	128 (33-128)
PID Loop Controllers (Ext. Pts.)	64	8	8	8	8	16 (9-16)
System Groups (Ext. Points)	64	32	32	4	4	8 (5-8)
- Points per System Group	160	64	64	32	32	32
Weekly Schedules (Ext. Pts.)	32	8	8	4	4	8 (5-8)
Annual Schedules (Ext. Pts.)	16	4	4	2	2	4 (3-4)
Programs (Control Basic)	128	10	10	5	5	10
Tables (User Defined)	5	5	5	3	3	6
Trend Logs	96	16	16	8	8	12
Runtime Logs	128	16	16	8	8	12
Passwords	256	256	256	27	27	27
Alarms	192	192	192	10	10	10
Sign-on Logs	32	32	32	None	None	None
Arrays	48	8	8	0	0	0
Custom Units (D or A)	8	8	8	3	3	3
Connections/Ports						
EIA-485 (Terminals)	T1 and T2	T2	T2	T2	T2	T2
NetSensor (Modular EIA-485)				Yes****	Yes	Yes
Ethernet	Yes	Yes	Yes			
EIA-232 (Terminals)	2 ports					
EIA-232 (9-pin D-sub)	1 port (shared)	1 port	1 port			
Modem Connection	Through EIA-232 port					
T1 Connectable Devices (Total)	32	32	32	1	1	1
T2 Connectable Devices (Total)	248	32	32	124	124	124
Write to Flash (# = device address)*****	Every 6 hrs	Every 6 hrs	Every 6 hrs	Midnight + #	Midnight + #	Midnight + #
Program Size (Each)	2500 bytes or 100 lines	2500 bytes or 100 lines	2500 bytes or 100 lines	1024 bytes or 100 lines	1024 bytes or 100 lines	2048 bytes or 100 lines
Bit Architecture						
Processor	32	32	32	16	16	16
Input, A/D	16	12	12	10	16	10
Output, D/A	12	12	12	8	8	8
Transfer Points (Total)						
In from T1	127	127	127			
Out to T1	127	127	127			
In from T2	512	512	512			
Out to T2	64	64	64			
In from all T1 & T2 Controllers				124	124	124
Out of a T2 Controller				32	32	63
Other Notes and Comments	16 inputs on KMD-5220 module, 16 outputs on KMD-5221				If replacing, see the KMD-5831, 5801/5802, or 5210	

*After up to 72 hours of power outage, the Real Time Clock automatically resets the system time upon power restoration.
**Cross-reference to obsolete legacy controller. Some specifications in obsolete controllers may be slightly different from those of equivalent current controllers. Specifications shown are for current controllers.
***Extended points in current Tier 2 controllers are points that are higher than those in the legacy/obsolete controllers. Extended points cannot be shared with a Tier 1 device.
****KMD-5800/7000 series are compatible with KMD-1160/1180 series NetSensors. KMD-6000 series are compatible only with KMD-1101/1121/1104/1124 NetSensors. Modular plugs in KMD-5501/5502/5504/5505/5559 are for configuration only.
*****Controllers also write to flash when a change in the software has been saved/downloaded.
(See individual data sheets for additional product details.)

KMD-7001 KMD-7051	KMD-7002 KMD-7052	KMD-7003 KMD-7053	KMD-7011C* KMD-7011	KMD-7013C* KMD-7013	KMD-7101C* KMD-7101	KMD-7102C* KMD-7102	KMD-7301C* KMD-7301	KMD-7302C* KMD-7302	KMD-7401C* KMD-7401
Yes		Yes					Yes	Yes	Yes
KMD-6001	KMD-6002		KMD-6011	KMD-6013	KMD-6101	KMD-6102	KMD-6301	KMD-6302	KMD-6401
KMD-6051	KMD-6052		KMD-6907	KMD-6908	KMD-6906	KMD-6905	KMD-6901	KMD-6909	KMD-6904
VAV Single Duct (4x4)	VAV Dual Duct (4x4)	VAV Fan Induction (4x4)	VAV (4x4)	VAV (4x4)	FCU (4x4)	FCU (4x4)	AHU (4x4)	RTU (4x4)	HPU (4x4)
T2	T2	T2	T2	T2	T2	T2	T2	T2	T2
4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	4
32	32	32	32	32	32	32	32	32	32
4	4	4	4	4	4	4	4	4	4
2	2	2	2	2	2	2	2	2	2
32	32	32	32	32	32	32	32	32	32
1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0
5	5	5	5	5	5	5	5	5	5
3	3	3	3	3	3	3	3	3	3
2	2	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2
27	27	27	27	27	27	27	27	27	27
10	10	10	10	10	10	10	10	10	10
None	None	None	None	None	None	None	None	None	None
0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3
T2	T2	T2	T2	T2	T2	T2	T2	T2	T2
Yes****	Yes****	Yes	Yes****	Yes****	Yes****	Yes****	Yes****	Yes****	Yes****
Through EIA-485 network connection to a KMD-5559 CommTalk Communications Interface									
1	1	1	1	1	1	1	1	1	1
124	124	124	124	124	124	124	124	124	124
Midnight + #	Midnight + #	Midnight + #	Midnight + #	Midnight + #	Midnight + #	Midnight + #	Midnight + #	Midnight + #	Midnight + #
1024 bytes or 100 lines	1024 bytes or 100 lines	1024 bytes or 100 lines	1024 bytes or 100 lines	1024 bytes or 100 lines	1024 bytes or 100 lines	1025 bytes or 100 lines	1024 bytes or 100 lines	1024 bytes or 100 lines	1024 bytes or 100 lines
16	16	16	16	16	16	16	16	16	16
8	8	8	8	8	8	8	8	8	8
8	8	8	8	8	8	8	8	8	8
32	32	32	32	32	32	32	32	32	32
32	32	32	32	32	32	32	32	32	32
**VAV: 1 input = air flow sensor, 1 output = actuator; 7003/7053 have 1 universal, 1 triac, and 1 relay output, 7001/7002/7051/7052 have 3 universal outputs; actuator stroke per minute: KMD-7001/7002/7003 = 18° KMD-7051/7052/7053 = 60°			VAV: inputs = 3 universal; outputs = 3 universal	VAV: inputs = 3 universal, and outputs = 1 triac, 1 tri-state, and 1 universal	FCU: outputs = 3 relays (sequenced by one output) and 2 triacs	FCU: outputs = 4 relays (3 relays sequenced by 1 output) and 2 triacs	AHU: outputs = 3 universal and 1 triac	RTU: outputs = 1 universal, 1 triac, and 2 staged triacs	HPU: outputs = 4 triacs

NOTE: This chart can also be downloaded as a separate file from the Product Selection Tools section of KMC Controls web site, **www.kmccontrols.com.**

SEE ALSO: The *KMDigital Controls and Hardware* section.

NetSensor Selection Guide

Model	Display Type & Protocol	Humidity Sensor	Buttons/Dials/Switches	Comments and Features
KMD-1101		No	6 buttons visible, 3 under cover	Discontinued, for replacement information, see the **KMD-1101/1104/1121/1124 NetSensors Replacement Cross-Reference** in the NetSensors section
KMD-1121		Yes		
KMD-1104	LED	No	Rotary setpoint dial, EasyView	
KMD-1124		Yes		
KMD-1151	(KMD only)	No	6 buttons visible, 3 under cover	Replaceable button labels
KMD-1154			Rotary setpoint dial, EasyView	Models with °F or °C dials available, data port concealed on back
KMD-1171		Yes	6 buttons visible, 3 under cover	Replaceable button labels
KMD-1174			Rotary setpoint dial, EasyView	Models with °F or °C dials available, data port concealed on back
KMD-1161		No	3 buttons visible, 6 under cover*	Round Setpoint button
KMD-1162			2 push buttons, 2 slide switches	Hospitality (Heat-Off-Cool & High-Med-Low), 2-character display
KMD-1164	LCD			Round Setpoint button
KMD-1181	(BACnet or KMD)			Round Setpoint button
KMD-1183		Yes	3 buttons visible, 6 under cover*	Round **Mode** button, Alarm button displays "ON/OFF"*
KMD-1184				Round Setpoint button
KMD-1185				Round **Mode** button, Alarm button displays "ALM/OFF"*
*See information below				
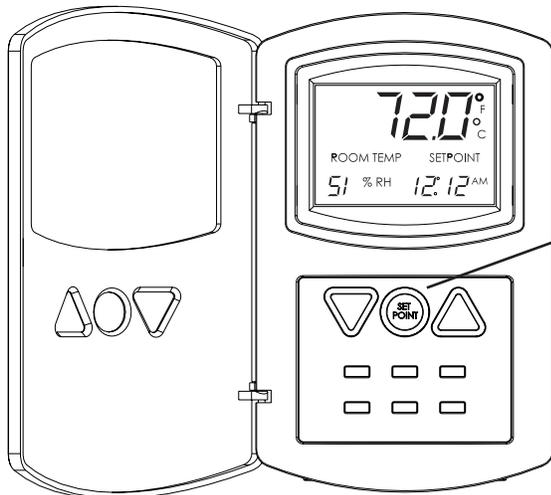
Setpoint Button
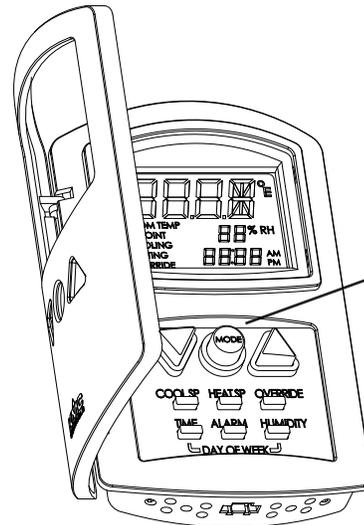
Mode Button
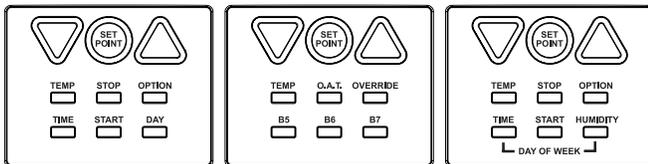
KMD-1164 **KMD-1161/1181** **KMD-1184**

The general-purpose KMD-1161/1164/1181/1184 NetSensors are most often used with controllers in networked VAV applications. The KMD-1183/1185 NetSensors are most often used with controllers in stand-alone (non-networked) systems.

SEE ALSO: The *NetSensors* section.

State	KMD-1183	KMD-1185
Alarm	Display shows room temperature. When Button 6 (ALARM) is pressed, "**ON**" is momentarily displayed.	Display shows flashing "**ALM**" (alternates with room temperature display). Pressing Button 6 suppresses "ALM" indication for 10 minutes, and if Button 6 is pressed again during the 10 minute suppression period, "ALM" shows momentarily. When "ALM" is flashing, if any button other than 6 is pressed, the display momentarily returns to the normal display corresponding to that button.
No Alarm		Display shows room temperature. When Button 6 is pressed, "**OFF**" is momentarily displayed.

SEE ALSO: *BAC-10000 Series FlexStat Programmable Thermostats* in the *BACnet Controllers and Hardware* section.

Sample Networks

See the Green Buildings Brochure (SB-048)

See the Scalable Building Automation with KMDigital Controls BROCHURE (SB-042) or POSTER (SB-043, Shown Above)

See also the Interoperable, Scalable Building Automation with KMC BACnet Solutions BROCHURE (SB-044) or POSTER (SB-045)

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SP-070