KMC CONTROLS
In touch.

KMDigital Catalog Supplement

Important Navigation Tips!

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

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

Bookmarks (another form of hyperlinks) in the left panel of the screen also offer easy navigation to the relevant sections:

- Clicking on the **+** will reveal/expand hidden subtopics.
- Clicking on the **–** will collapse subtopics.
- If bookmarks are not visible, select View > Navigation Panels > Bookmarks.

Search (Ctrl key + F if the search field is not visible) can find all appearances of entered text.

Contents

Introduction

About this Catalog

This SP-093 KMDigital Catalog Supplement supplements the information in the much larger **SP-071 KMC Controls Catalog (with Electronic and Pneumatic Controls)**. See that catalog for information about KMC terms, conditions of sale, warranty, and returns. That catalog also contains various input and output devices for the digital controllers. Our analog electronic line includes actuators, relays, sensors, switches, thermostats, transducers, transformers, transmitters, valves, and accessories that are used with, not only our older analog electronic controllers, but also the latest digital controllers.

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

For more information about:

- **Accessories and digital sensors (NetSensors)**, see the Digital Sensors and Accessories Catalog Supplement (SP-094).
- **BACnet products**, see the BACnet Catalog Supplement (SP-092).

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

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

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

Bookmarks (another form of hyperlinks) in the left panel of the screen also offer easy navigation to the relevant sections:

- Clicking on the + will reveal/expand hidden subtopics.
- Clicking on the – will collapse subtopics.
- If bookmarks are not visible, select View > Navigation Panels > Bookmarks.

Search (Ctrl key + F if the search field is not visible) can find all appearances of entered text.

Products in this Catalog

Still . . . Made in the U.S.A.

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

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

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

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

About KMC Controls

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

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

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

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

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

Multiple ways of communicating with the company are:

Address (Mailing/Shipping)

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

Toll-free Sales

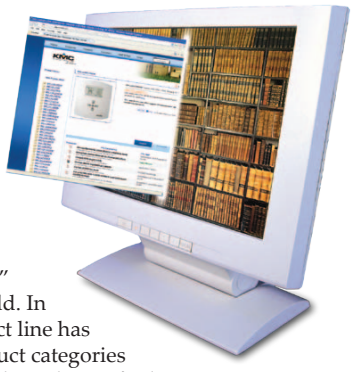
Telephone	**866.302.4KMC (4562)**
FAX	**800.276.5555**

Internet

kmccontrols.com
facebook.com/KMCControls
linkedin.com/company/kmc-controls
twitter.com/kmccontrols
youtube.com/kmccontrols
info@kmccontrols.com

Web Site and Publications

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



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

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

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

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

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

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

Controller Selection Guide

Current Controller Model w/ RTC*	KMD-5210*	KMD-5205*	KMD-5270*	KMD-5801*		KMD-5831*	
Current Controller without RTC				KMD-5802			KMD-7001 KMD-7051
BACnet Equivalent				*Yes*		*Yes*	*Yes*
*Obsolete/Legacy Controller***	*KMD-5110**			*5501/5504**	*KMD-5821**		*KMD-6001*
	*KMD-5111**			*5502/5505*			*KMD-6051*
Description	LAN Controller	LANLite (8x8)	WebLite (8x8)	PLC-16 (8x8)	PLC-16+ (8x8)	PLC-28 (16x12)	VAV Single Duct (4x4)
Tier Type	T1	T1	T1	T2	T2	T2	T2
Inputs (Extended Points)***	Up to 128 I/Os	8	8	8	8	16 (9-16)***	4
Outputs (Extended Points)	Up to 128 I/Os	8	8	8	8	12 (9-12)	4
Variables (Ext. Points)	256	128	128	64 (33-64)	64 (33-64)	128 (33-128)	32
PID Loop Controllers (Ext. Pts.)	64	8	8	8	8	16 (9-16)	4
System Groups (Ext. Points)	64	32	32	4	4	8 (5-8)	2
- Points per System Group	160	64	64	32	32	32	32
Weekly Schedules (Ext. Pts.)	32	8	8	4	4	8 (5-8)	1
Annual Schedules (Ext. Pts.)	16	4	4	2	2	4 (3-4)	0
Programs (Control Basic)	128	10	10	5	5	10	5
Tables (User Defined)	5	5	5	3	3	6	3
Trend Logs	96	16	16	8	8	12	2
Runtime Logs	128	16	16	8	8	12	2
Passwords	256	256	256	27	27	27	27
Alarms	192	192	192	10	10	10	10
Sign-on Logs	32	32	32	None	None	None	None
Arrays	48	8	8	0	0	0	0
Custom Units (D or A)	8	8	8	3	3	3	3
Connections/Ports							
EIA-485 (Terminals)	T1 and T2	T2	T2	T2	T2	T2	T2
NetSensor (Modular EIA-485)				Yes****	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	1
T2 Connectable Devices (Total)	248	32	32	124	124	124	124
Write to Flash (# = device address)*****	Every 6 hrs	Every 6 hrs	Every 6 hrs	Midnight + #	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	1024 bytes or 100 lines
Bit Architecture							
Processor	32	32	32	16	16	16	16
Input, A/D	16	12	12	10	16	10	8
Output, D/A	12	12	12	8	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	32
Out of a T2 Controller				32	32	63	32
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		1 input = air fl 7003/7053 h relay output, universal outp KMD- KMD-

*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-7011C*	KMD-7013C*	KMD-7101C*	KMD-7102C*	KMD-7301C*	KMD-7302C*	KMD-7401C*
KMD-7002 KMD-7052	**KMD-7003 KMD-7053**	**KMD-7011**	**KMD-7013**	**KMD-7101**	**KMD-7102**	**KMD-7301**	**KMD-7302**	**KMD-7401**
	Yes					*Yes*	*Yes*	*Yes*
KMD-6002		*KMD-6011*	*KMD-6013*	*KMD-6101*	*KMD-6102*	*KMD-6301*	*KMD-6302*	*KMD-6401*
KMD-6052		*KMD-6907*	*KMD-6908*	*KMD-6906*	*KMD-6905*	*KMD-6901*	*KMD-6909*	*KMD-6904*
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
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
4	4	4	4	4	4	4	4	4
2	2	2	2	2	2	2	2	2
32	32	32	32	32	32	32	32	32
1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0
5	5	5	5	5	5	5	5	5
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
27	27	27	27	27	27	27	27	27
10	10	10	10	10	10	10	10	10
None	None	None	None	None	None	None	None	None
0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3
T2	T2	T2	T2	T2	T2	T2	T2	T2
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
124	124	124	124	124	124	124	124	124
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	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
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
VAV: ow sensor, 1 output = actuator; ave 1 universal, 1 triac, and 1 7001/7002/7051/7052 have 3 uts; actuator stroke per minute: -7001/7002/7003 = 18° -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

Revised 7/2/2008

General Purpose Controllers

Accessories and NetSensors

SEE: Digital Sensors and Accessories Catalog Supplement (SP-094).

KMD-1611 iControl Data Collection Panel Cross-Reference

SEE: *KMD-5270-005 WebLite with Modbus interface on page 12* **for new installations.**

KMD-5xxx Controller Replacement Cross-Reference

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

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 with10-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 and are intuitive to program.

Models

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

SEE ALSO: *Controller Selection Guide on page 6* **and KMD-5205 series web page for details.**

Accessories

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
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-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	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
- 10Base T Ethernet port supports 31 KMC Tier 1 controllers
- EIA-485 supports connections to 64 KMC Tier 2 controllers
- EIA-232 connects directly to computer serial port or optional external modem for remote operation

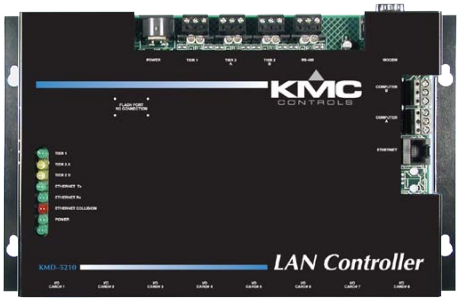
Other Features
- 127 networked points in from Tier 1 controllers, 512 from Tier 2 controllers
- 64 networked points out to Tier 1 controllers, 64 to Tier 2 controllers
- 10 Control Basic program areas
- 8 PID control loops
- 128 program variables software selectable as analog or digital with standard 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

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
- SASO PCP Registration KSA R-103260

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)

SEE ALSO: *Controller Selection Guide on page 6* **and KMD-521x series web pages for details.**

KMD-5210 Accessories

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 Ethernet 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
- SASO PCP Registration KSA R-103260

SEE ALSO: KMD-5210 web page for more information.

KMD-5220/5221
I/O Modules (for KMD-5210/5211 Series)

Models

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

SEE ALSO: *Controller Selection Guide on page 6* **and KMD-522x series web pages for details.**

KMD-5220 Accessories

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

HPO-6700 series	Output override boards
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 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
- 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)

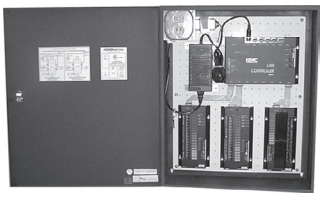
Environmental Limits

- 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
- SASO PCP Registration KSA R-103260

KMD-5230 Series
LAN Controller Panels



These factory-configured systems include an HCO-1035 lockable steel control panel enclosure, a KMD-5210 series LAN Controller, receptacle, power disconnect switch, and KMD-5563 power supply. (Order KMD-5220/5221 I/O modules separately.) Listed as UL 916 Enclosed Energy Management Equipment and UL 2017 Signal System Equipment.

Models

KMD-5230	Panel, LAN Controller, and power supply assy.
KMD-5230-001	With a BACnet Ethernet 802.3 interface
KMD-5230-002	With a BACnet MS/TP interface

KMD-5201/5202
LAN Controller BACnet Ethernet 802.3 and MS/TP Upgrades

These upgrades add a BACnet Ethernet 802.3 (ISO 8802-3) interface or BACnet MS/TP interface to a standard KMD-5210 LAN Controller.

NOTE: Requires an HTO-1102 flash upgrade kit to install.

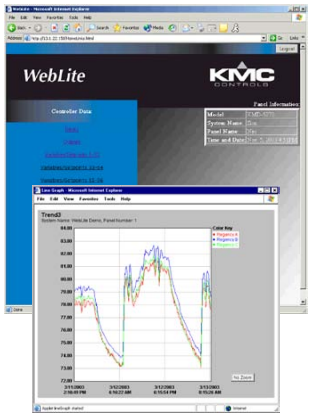
Models

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

Accessories

HTO-1102	Flash upgrade kit

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



The KMD-5270 series WebLite™ 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
KMD-5270-006	WebLite with Modbus and BACnet Ethernet 802.3 interface

SEE ALSO: *Controller Selection Guide on page 6* **and KMD-5270 series web pages for details.**

Accessories

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
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-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub

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 64 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

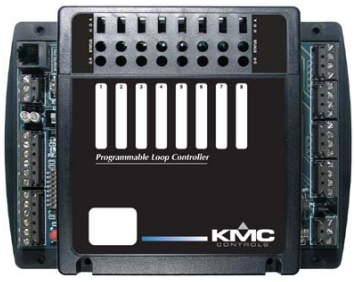
Environmental Limits
- Operating: 32 to 120° F (0 to 49° C)
- Shipping: –40 to 140° F (–40 to 60° C)
- Humidity: 0 to 95% RH (non-condensing)

Regulatory
- UL 916 Energy Management Equipment listed
- FCC Class B, Part 15, Subpart B
- SASO PCP Registration KSA R-103260

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

SEE: *KMD-5xxx Controller Replacement Cross-Reference on page 8*.

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

SEE ALSO: *Controller Selection Guide on page 6* **and KMD-5801/5802 web pages for details.**

Accessories

HPO-6700 series	Output override boards
HPO-0054	Replacement fuse bulb
HPO-0063	Replacement two-pin jumper
HCO-1102	Steel control enclosure, 10.1 W x 2.4 H x 7.1" D
KMD-1151/1171	NetSensor
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-040	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)
- SASO PCP Registration KSA R-103260

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.

SEE ALSO: *Controller Selection Guide on page 6* **and KMD-5831 web page for details.**

Accessories

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
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
KMD-1151/1171	NetSensor
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub

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
- SASO PCP Registration KSA R-103260

Application Specific Controllers

Accessories and NetSensors

SEE: Digital Sensors and Accessories Catalog Supplement (SP-094).

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. To replace KMD-1101/1104/1121/1124 NetSensors, see the Digital Sensors and Accessories Catalog Supplement (SP-094).

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

SEE ALSO: *Controller Selection Guide on page 6* **and KMD-7001/7051, KMD-7002/7052, and KMD-7003/7053 web pages for details.**

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-0011	Reducer bushing, 1/2" to 3/8" shaft adapter
HMO-4531	Replacement non-rotational bracket
HPO-0063	Replacement two-pin jumper
HPO-0054	Replacement fuse bulb
KMD-1151/1171	NetSensor
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-040	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
- SASO PCP Registration KSA R-103260
- (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.

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

SEE ALSO: *Controller Selection Guide on page 6* **and KMD-7011/7011C and KMD-7013/7013C web pages for details.**

Accessories

HCO-1101	Control panel enclosure
HMO-4524	Replacement Snap Track, 3-1/4 x 8-1/2"
HPO-0054	Replacement fuse bulb
HPO-0063	Replacement two-pin jumper
KMD-1151/1171	NetSensor
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-6111-040	Transformer, 120-to-24 VAC, 40 VA, single hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual hub

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

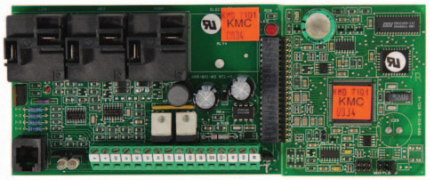
• Supply voltage	24 volts AC (–15%, +20%), 10 VA, Class 2
• Weight	KMD-7011/7011C: 4.25 oz. (121 g) KMD-7013/7013C: 4.75 oz. (135 g)
• Size	KMD-7011/7011C: 6-3/4 x 3-1/4" (172 x 83 mm) KMD-7013/7013C: 7-1/2 x 3-1/4" (191 x 83 mm)
Mounting	2.75" (70 mm) section of 3.25" (83 mm) Snap Track supplied for panel mounting

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
- SASO PCP Registration KSA R-103260

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			

SEE ALSO: *Controller Selection Guide on page 6* **and KMD-7101/7102 series web pages for details.**

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)

Mounting: 2.75" (70 mm) section of 3.25" (83 mm) Snap Track supplied for panel mounting

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
- SASO PCP Registration KSA R-103260

Accessories

HCO-1101	Control panel enclosure
HMO-4524	Replacement Snap Track, 3-1/4 x 8-1/2"
HPO-0054	Replacement fuse bulb
HPO-0063	Replacement two-pin jumper
KMD-1151/1171	NetSensor
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual hub

KMD-7311/7312 Attain Cross-Reference

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 except for the STE-5012. Use one of the STE-6000 series sensors instead.

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: *Controller Selection Guide on page 6* **and KMD-7301/7301C, KMD-7302/7302C, and KMD-7401/7401C web pages for details.**

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
- 2 trend log monitors
- 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
- SASO PCP Registration KSA R-103260

Accessories

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
KMD-1151/1171	NetSensor
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub

Lighting and Smoke Control

Lighting Control Solutions

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

KMC programmable KMD-58xx and KMD-52xx series controllers can use schedules plus third-party switches and motion sensors (for occupancy control) and photocells (for daylight harvesting) connected to the inputs. Third-party dimmers and latching relays can be connected to the controller's outputs.

KMD-1261/1281 NetSensors have built-in motion sensors that can be used to trigger room lighting (in addition to changing temperature setpoints) when connected to a properly configured KMD-58xx controller and relay.

Accessories

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

Models

KMD-5801	KMDigital Tier 2 (8 x 8) controller with NetSensor connector and real-time clock (see *page 13*)
KMD-5802	KMDigital Tier 2 (8 x 8) controller with NetSensor connector and without real-time clock
KMD-5831	KMDigital Tier 2 (16 x 12) controller with NetSensor connector and real-time clock (see *page 14*)
KMD-5205	KMDigital Tier 1 (8 x 8) LANLite controller with real-time clock (see *page 9*)
KMD-521x Series	KMDigital Tier 1, LAN controller with real-time clock and expandable I/Os (see *page 10*)
KMD-5270 Series	KMDigital Tier 1 (8 x 8) WebLite controller (see *page 12*)

Smoke Control System (UUKL): Firefighters' Smoke Control Station (with KMD-5801/5802)

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

SEE ALSO: *KMD-5801/5802 Direct Digital Controllers, Tier 2 (8 x 8) on page 13*.

Accessories (UL 864 Listed)

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

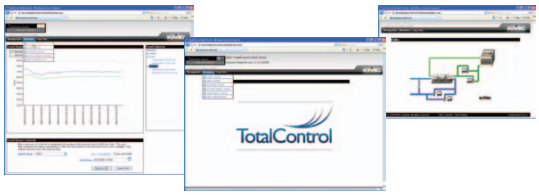
*NOTE: These accessories are required in smoke control systems.

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

Software

TC Series

TotalControl–Building Services Building Automation Software



The **TotalControl suite of programs** includes:

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

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

Building Services includes the following components.

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

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

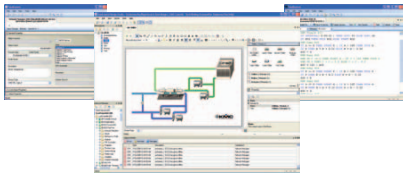
TotalControl TC-BAC and TC-BACUNL when used with TotalControl Design Studio, is a BACnet Testing Laboratory listed Advanced Operator Workstation.

Models

SEE: TotalControl series web page and data sheet for details.

TC Series

TotalControl–Design Studio Advanced Operator Workstation Software



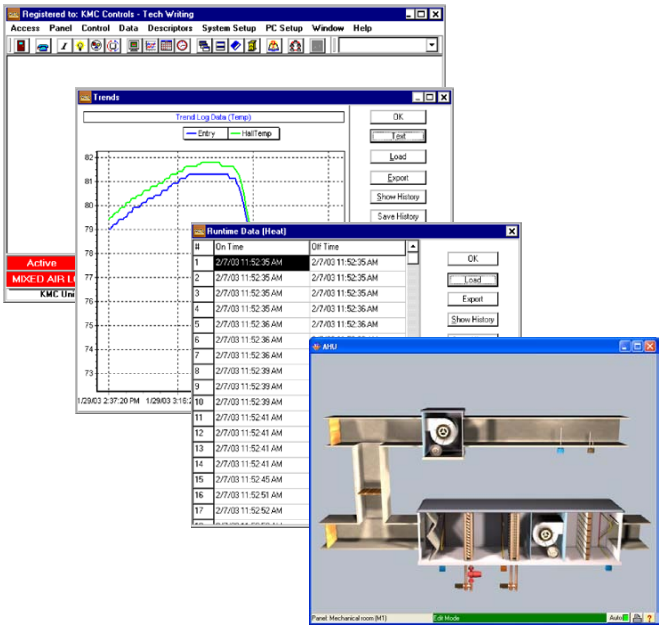
TotalControl Design Studio, when used as part of TC-BAC Building Services, is a BACnet Testing Laboratory listed Advanced Operator Workstation, used for configuring a building automation system. Built on XML and Microsoft.Net, this program is just one part of a powerful suite of software tools. Design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

- Standard Microsoft Windows interface—Quickly locate controllers, objects, and points from an expandable list of controllers and devices
- Create custom graphic pages—Design Studio includes an extensive graphics library of HVAC components with which you can build operator interface pages and then publish them for Internet browser access
- Configure controllers—Individual devices and controllers are configured with standard Windows text fields and drop-down lists
- Alarm management—Use Design Studio to set up alarms to notify key operators of critical events
- View and acknowledge alarms—Set up email notification with custom messages for key operators
- Program with Control Basic—The TotalControl Code Editor is the tool with which Control Basic programs are entered and edited in KMC controllers
- View reports—Use TotalControl reports for site commissioning and recording system operation
- Configure trends—Configure TotalControl to collect trend data from either controller based trends or by direct polling of a point and storing the data in the SQL database; TotalControl supports controller, database, and PC trends
- Scheduling—Schedule special holidays, maintenance schedules, and special days for up to a full year
- Supported protocols—Design Studio, through a connection to TotalControl Building Services, supports the configuration of controllers operating on BACnet, KMDigital, as well as OPC
- Security—TotalControl security locks out tampering and still allows authorized operators to make changes
- Internet browser site access—Once the site is configured and the graphic pages are constructed, operators manage the site with an internet browser access; Design Studio is not required for daily operation

Models

SEE: TotalControl series web page and data sheet for details.

KMD-5791
WinControl XL Plus



WinControl® is building automation software for programming and monitoring KMC KMDigital 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—discontinued, 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.

SEE: KMD-5791 web page for details.

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

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

SEE: KMD-5779 web page for details.

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

Additional Information

Accessories

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

Output options include:

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

Input options include:

- **Sensors and transmitters** (temperature, humidity, air flow, pressure, smoke, CO, CO_2, and refrigerant)
- **Switches** (limit, position, and pressure)
- **Transducers/converters** (pressure, air flow, current, voltage, and pulse width)

Other miscellaneous accessory options include:

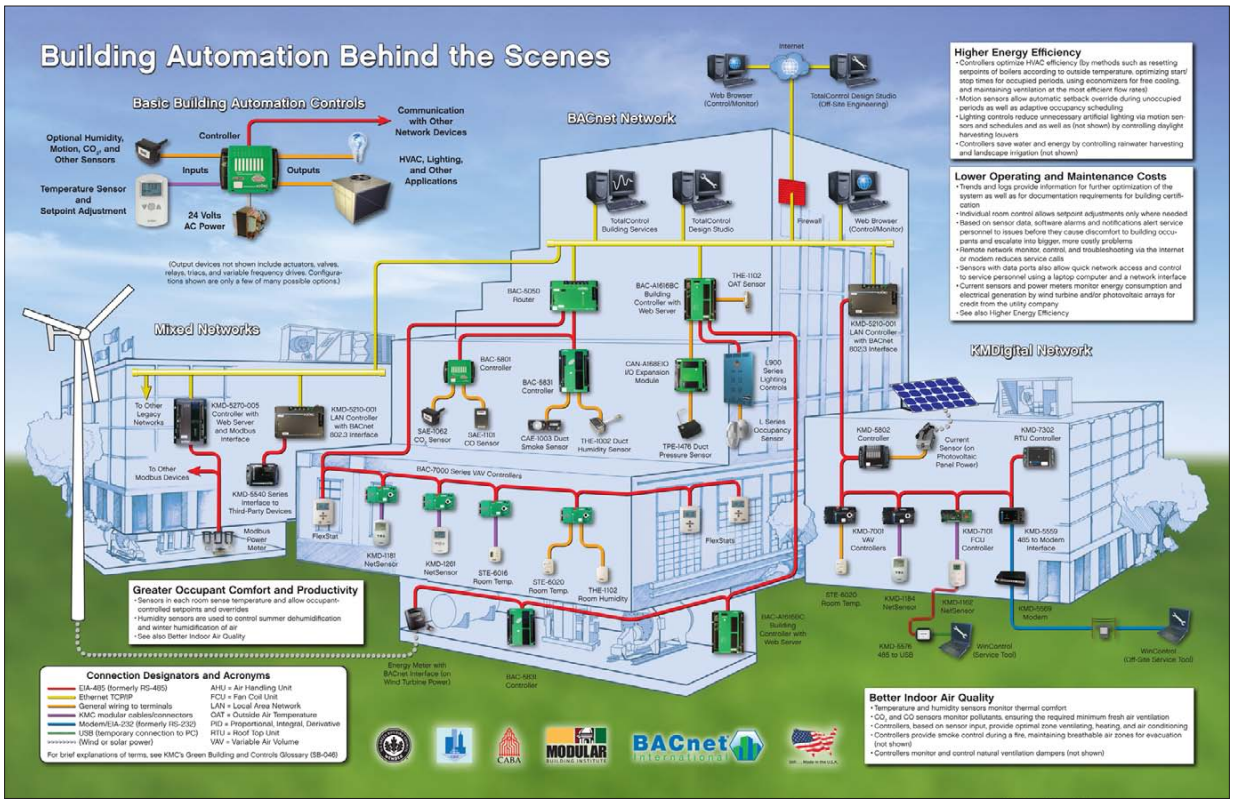
- **Controllers** (analog electronic, and low limit)
- **Relays** (multiple inputs, outputs, and control options)
- **Thermostats** (analog electronic)
- **Enclosures** (various sizes for relays, controllers, and actuators)

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

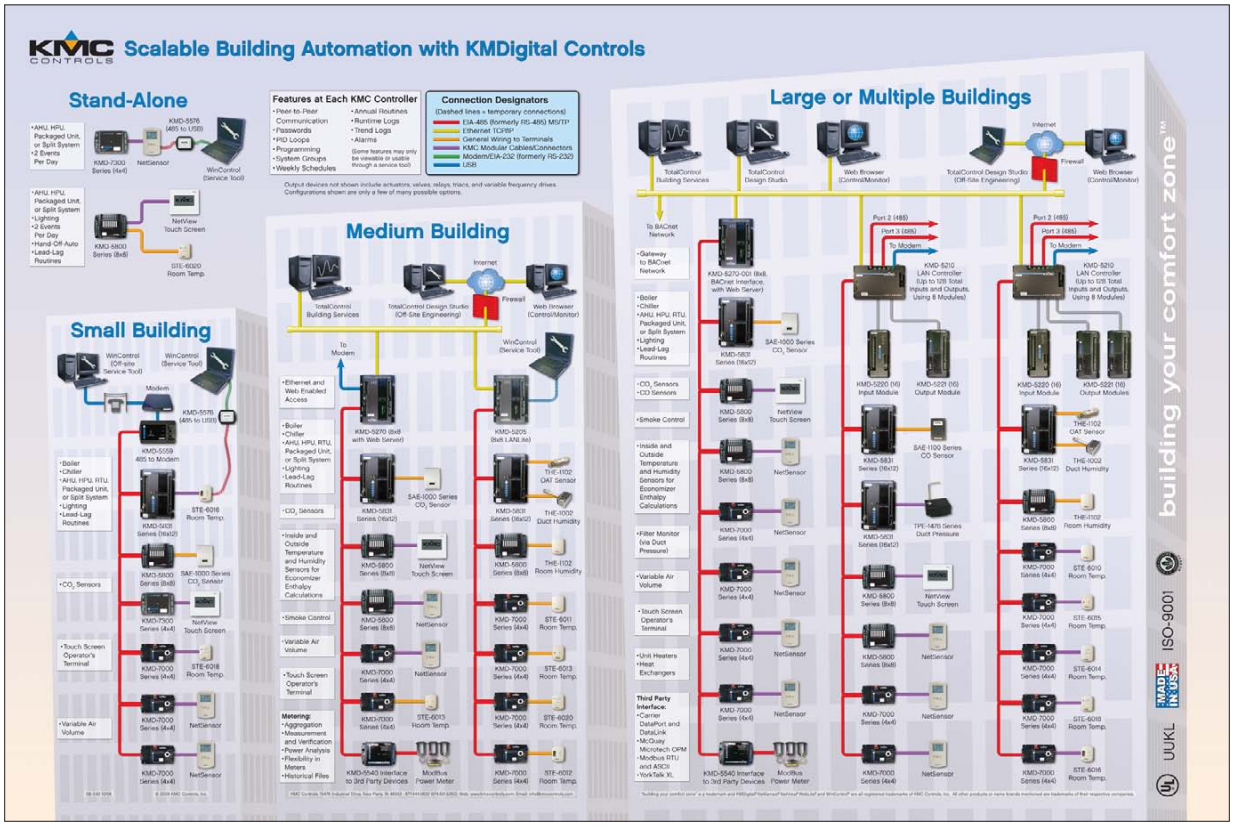
For digital sensors (NetSensors) and digital accessories (including literature about digital products), see the Digital Sensors and Accessories Catalog Supplement (SP-094).

NOTE: **For BACnet products**, see the BACnet Catalog Supplement (SP-092).

Sample KMDigital Networks



This is the inside spread of the Controlling Your Green Building Brochure (SB-048)



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

Index