CAN-5900 Series

I/O Expansion Modules

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DESCRIPTION

KMC Conquest™ CAN-5900 series input/output expansion modules are designed for use with BAC-5900 series controllers. Multiple modules can be connected to a controller via the EIO communications port (a CAN bus). Each CAN-5901 supports up to eight inputs and eight outputs. Each CAN-5902 supports up to sixteen inputs.

A BAC-5900 series controller with four connected CAN-5900 series modules can access up to 74 physical (Room Sensor port and terminal block) inputs and up to 40 outputs:

- With four CAN-5901 modules, the controller can access 42 inputs and 40 outputs.
- With four CAN-5902 modules, the controller can access 74 inputs and 8 outputs.
- CAN-5901 and CAN-5902 modules can also be "mixed and matched" for a desired number of inputs and outputs.

One BAC-5901 And...		Provides...	
CAN-5901s	**CAN-5902s**	**Inputs***	**Outputs**
0	0	10	8
1	0	18	16
2	0	26	24
3	0	34	32
4	0	42	40
0	1	26	8
0	2	42	8
0	3	58	8
0	4	74	8
1	3	66	16
2	2	58	24
3	1	50	32

*Up to 74 physical inputs are possible, but up to 106 input objects can be created (with 32 unused) for addressing.

KMC Conquest® Automation Hardware

USA MADE · USA MADE · CE · FC · c UL US LISTED · SIGNALING UL LISTED · RoHS COMPLIANT LEAD FREE

APPLICATIONS

I/O expansion modules for BAC-5900 series controllers can be used with equipment such as:

- Air handling units
- Boilers
- Chillers
- Pumps
- Cooling towers
- Roof top units
- Heat pump units
- Fan coil units
- Unit ventilators
- Other HVAC and building automation system equipment

(See also **Sample Installation on page 5**.)

MODELS

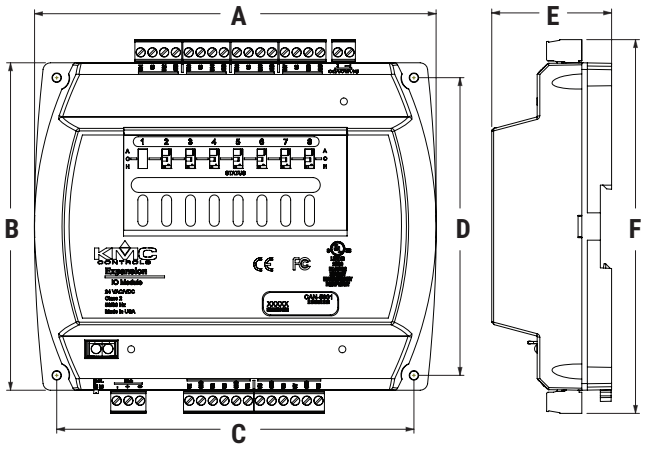
APPLICATIONS	INPUTS*	OUTPUTS*	MODEL
Input/Output Expansion	8 universal (software configurable as analog, binary, or accumulator)	8 universal • Software configurable as analog or binary • Override boards give additional options**	**CAN-5901**
Input Expansion	16 universal (software configurable as analog, binary, or accumulator)	None	**CAN-5902*** **

*Up to four CAN-5900 series expansion modules can be used with BAC-5900 series controllers to provide up to 74 inputs or 40 outputs. CAN-5900 modules have only terminal block inputs and do not have a Room Sensor port.

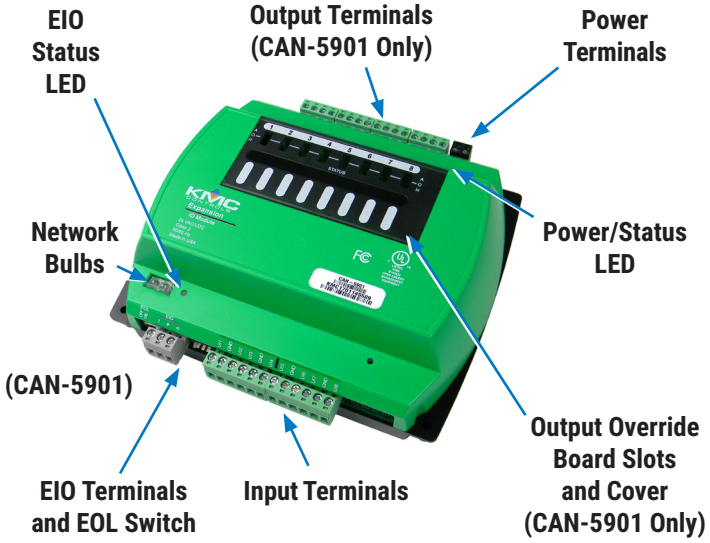
**HPO-6700 series output override board series provide (triac, NC/NO relays, 4–20 mA, adjustable 0–10 VDC) options for devices that cannot be powered from a standard universal output. The boards can also be used with the CAN-5901.

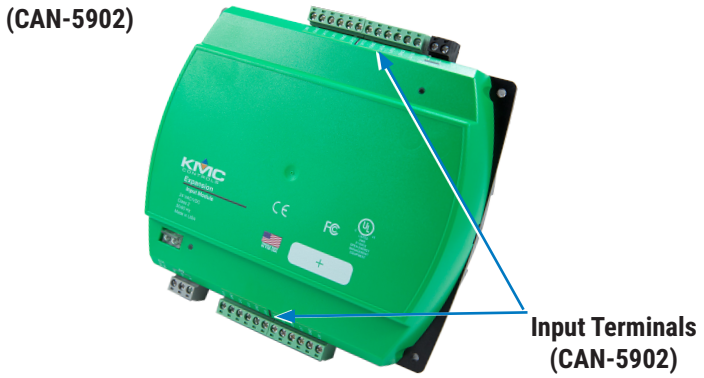
***A CAN-590**2** requires a BAC-5900 series controller with firmware version R1.2.0.9 or later.

SPECIFICATIONS



DIMENSIONS		
A	6.744 inches	171 mm
B	5.500 inches	140 mm
C	6.000 inches	152 mm
D	5.000 inches	127 mm
E	2.012 inches (CAN-5901) 1.500 inches (CAN-5902)	51 mm (CAN-5901) 38 mm (CAN-5902)
F	6.279 inches	159 mm





Inputs and Outputs

Inputs, Universal

Universal inputs	Configurable as analog, binary, or accumulator objects (8 on CAN-5901, 16 on CAN-5902)
Termination	1K and 10K ohm sensors, 0–12 VDC, or 0–20 mA (without need for an external resistor)
Resolution	16-bit analog-to-digital conversion
Protection	Overvoltage protection (24 VAC, continuous)
Wire size	12–24 AWG, copper, in removable screw terminal blocks

TERMINAL COLOR CODE	
Black	24 VAC/VDC Power
Gray	CAN Communications
Green	Inputs/Outputs

Outputs, Universal (CAN-5901 Only)

Universal outputs	Configurable as an analog (0 to 12 VDC) or binary object (0 or 12 VDC, on/off); alternately, an output override board is installed for devices that cannot be powered from a standard universal output (8 on CAN-5901)
Power/protection	Each short-circuit protected universal output capable of driving up to 100 mA (at 0–12 VDC) or 300 mA total for all outputs
Resolution	12-bit digital-to-analog conversion
Wire size	12–24 AWG, copper, in removable screw terminal blocks

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Communication Ports

EIO Expansion	One CAN serial bus connection (terminal block) for daisy-chaining I/O expansion modules up to 200 feet (61 meters) from the controller via standard shielded twisted-pair wire

Configuration Tools

Via BAC-5901	KMC Connect software, TotalControl software, or KMC Converge module for Niagara WorkBench

Hardware Features

Processor, Memory, and Clock

Processor	32-bit ARM® Cortex-M4
Memory	Configuration parameters are stored in nonvolatile memory; auto restart on power failure

Indicators and Isolation

LED indicators	Power/status and EIO (CAN) communication
Communication bulbs	One EIO (CAN) communications bulb assembly indicates reversed polarity and isolates circuit
Switch	EOL (end of line) for EIO (CAN) bus

Installation

Power

Supply voltage	24 VAC (50/60 Hz) or 24 VDC; –15%, +20%; Class 2 only; non-supervised (all circuits, including supply voltage, are power limited circuits)
Required power	14 VA, plus external loads
Wire size	12–24 AWG, copper, in a removable screw terminal block

Enclosure and Mounting

Weight	14 ounces (0.4 kg)
Case material	Green and black flame retardant plastic
Mounting	Direct mounting to panels or DIN rails

Environmental Limits

Operating	32 to 120° F (0 to 49° C)
Shipping	–40 to 160° F (–40 to 71° C)
Humidity	0 to 95% relative humidity (non-condensing)

Warranty, Protocol, and Approvals

Warranty

KMC Limited Warranty	5 years (from mfg. date code)

Protocol

CAN	CAN (Controller Area Network) bus on EIO terminals

Regulatory Approvals

UL (both)	UL 916 Energy Management Equipment listed
(CAN-5901 only)	UL 864 Smoke Control Equipment listed (UUKL), 10th edition—for smoke control applications, see **Smoke Control Manual for KMC Conquest Systems**, P/N 000-035-18)
CE	CE compliant
RoHS	RoHS compliant
FCC (for CAN-5901)	FCC Class A, Part 15, Subpart B and complies with Canadian ICES-003 Class A*
FCC (for CAN-5902)	FCC Class B, Part 15, Subpart B and complies with Canadian ICES-003 Class B*

*This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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ACCESSORIES

NOTE: For accessory details, see the respective product data sheets and installation guides.

Actuators and Sensors

MEP-4xxx	Actuators, 25 to 90 in-lb., fail-safe and non-fail-safe
MEP-7xxx	Actuators, 180 and 320 in-lb., fail-safe and non-fail-safe
STE-60xx	Room temperature sensors
STE-14xx	DAT, OAT, and other temp. sensors

Miscellaneous Hardware

HCO-1103	Steel control enclosure, 10-1/8 x 2-5/8 x 7-19/32 inches (257 x 67 x 193 mm)
HCO-1035	Steel control enclosure, 20 x 24 x 6 inches (508 x 610 x 152 mm)*
HCO-1036	Steel control enclosure, 24 x 36 x 6 inches (610 x 914 x 152 mm)*
HPO-0055	Replacement network bulb assembly (pack of 5)
HPO-0063	Replacement output (override board) jumper, 2-pin (pack of 5)
HPO-9901	Controller replacement parts kit with terminal blocks and DIN clips

***NOTE:** For smoke control applications, the CAN-5901 must be mounted in a UL Listed FSCS enclosure or listed enclosure with minimum dimensions. The HCO-1035 and HCO-1036 are approved for such applications. The CAN-5902 is not approved for smoke control applications.

Output Override Boards (for CAN-5901)

HPO-6701**	Triac output w/ zero-cross switching (AC only)
HPO-6702	0–10 VDC analog with adjustable override potentiometer
HPO-6703	Relay, NO contacts (AC/DC)
HPO-6704**	4–20 mA DC current loop with adjustable override potentiometer
HPO-6705	Relay, NC contacts (AC/DC)

****NOTE:** Only the HPO-6701 and HPO-6704 of the HPO-6700 series output override boards are approved for smoke control applications. The CAN-5902 is not approved for smoke control applications, and it does not have outputs.

Transformers, 120 to 24 VAC

XEE-6111-050	50 VA, single-hub
XEE-6112-050	50 VA, dual-hub
XEE-6112-100	96 VA, dual-hub (approved for smoke control applications)

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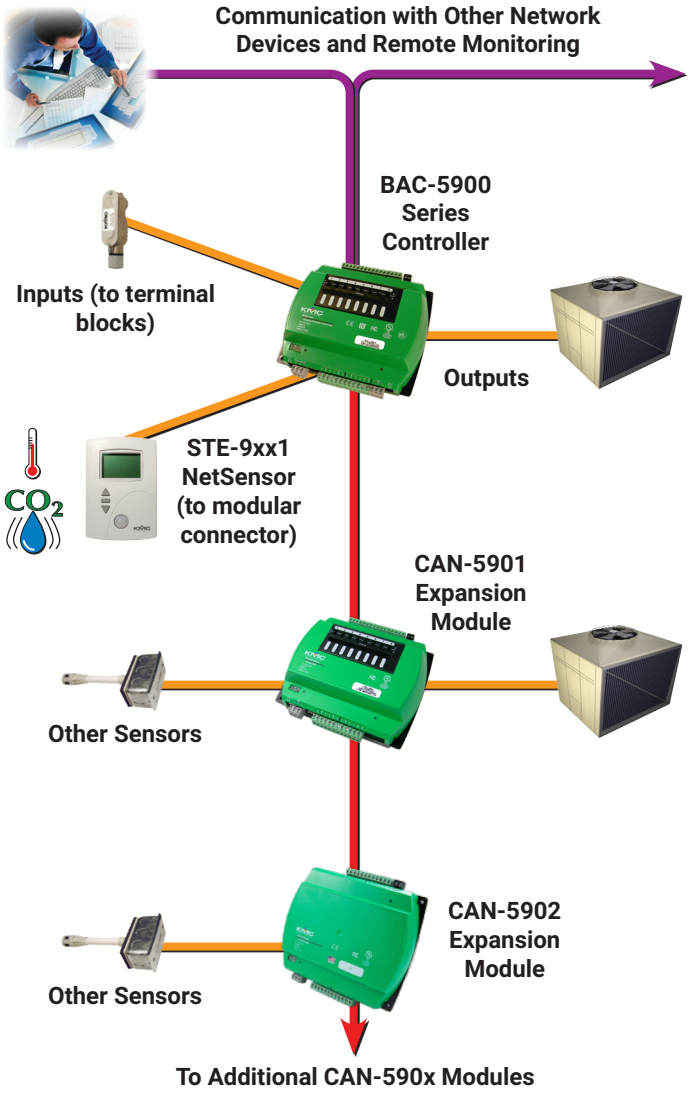
SAMPLE INSTALLATION



For more information about installation and operation, see:

- **CAN-5900 Series Expansion I/O Module Installation Guide**
- **KMC Conquest Controller Application Guide**
- **Smoke Control Manual for KMC Conquest Systems** (CAN-5901 only)

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SUPPORT

Additional resources for installation, configuration, application, operation, programming, upgrading, and much more are available on the web at **www.kmccontrols.com**. Log-in to see all available files.

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