# Conquest CAN-5900 Series

## I/O Expansion Modules

## DESCRIPTION

KMC Conquest™ CAN-5900 series input/output expansion modules are designed for use with BAC-5900 series controllers. Multiple CAN-5901s can be connected to a controller via a CAN bus. Each CAN-5901 supports up to eight inputs and eight outputs. For example, a BAC-5901 with four connected CAN-5901s could access up to (internal and external) 42 inputs and 40 outputs connected via terminal blocks.

## 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 4**.)

## MODELS

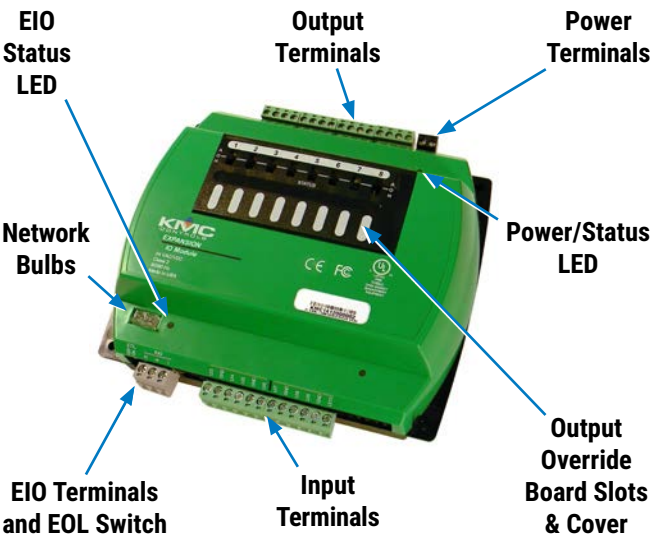| APPLICATIONS | INPUTS | OUTPUTS* | MODEL |
|---|---|---|---|
| I/O Expansion | 8 universal (software configurable as analog, binary, or accumulator) | 8 universal<br>• Software configurable as analog or binary<br>• Override boards give additional options** | CAN-5901 |

*Up to four (8 x 8) CAN-5901 I/O expansion modules can be used with BAC-5900 series controllers to provide up to (internal and external) 42 inputs and 40 outputs.

**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.

# SPECIFICATIONS
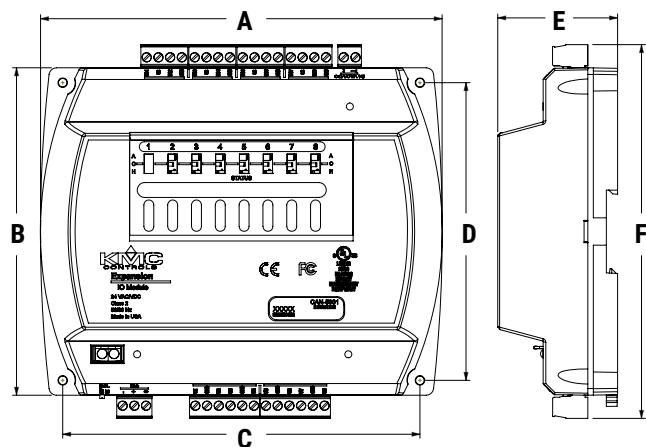


| | DIMENSIONS | |
|---|---|---|
| A | 6.744 inches | 171 mm |
| B | 5.500 inches | 140 mm |
| C | 6.000 inches | 152 mm |
| D | 5.000 inches | 127 mm |
| E | 2.012 inches | 51 mm |
| F | 6.279 inches | 159 mm |

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

## Inputs and Outputs

### Inputs, Universal (8 on Terminal Blocks)

| | |
|---|---|
| Universal inputs | Configurable as analog, binary, or accumulator objects |
| 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 |

### Outputs, Universal (8 on Terminal Blocks)

| | |
|---|---|
| Universal outputs | Configurable as an analog (0 to 12 VDC) or binary object (0 or 12 VDC, on/off); alternately, an output over-ride board is installed for devices that cannot be powered from a standard universal output |

| | |
|---|---|
| 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 |

## Communication Ports

| | |
|---|---|
| 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[AX] 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 CAN communication |
| Communication bulbs | One CAN communications bulb assembly indicates reversed polarity and isolates circuit |
| Switch | EOL (end of line) for CAN bus |

# Installation

## Power

| | |
|---|---|
| Supply voltage | 24 VAC (−15%, +20%), 50/60 Hz, 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 terminals |

## Regulatory Approvals

| | |
|---|---|
| UL | UL 916 Energy Management Equipment listed |
| CE | CE compliant (pending) |
| RoHS | RoHS compliant (pending) |
| FCC | FCC Class A, Part 15, Subpart B and complies with Canadian ICES-003 Class A* |

*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.

# 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

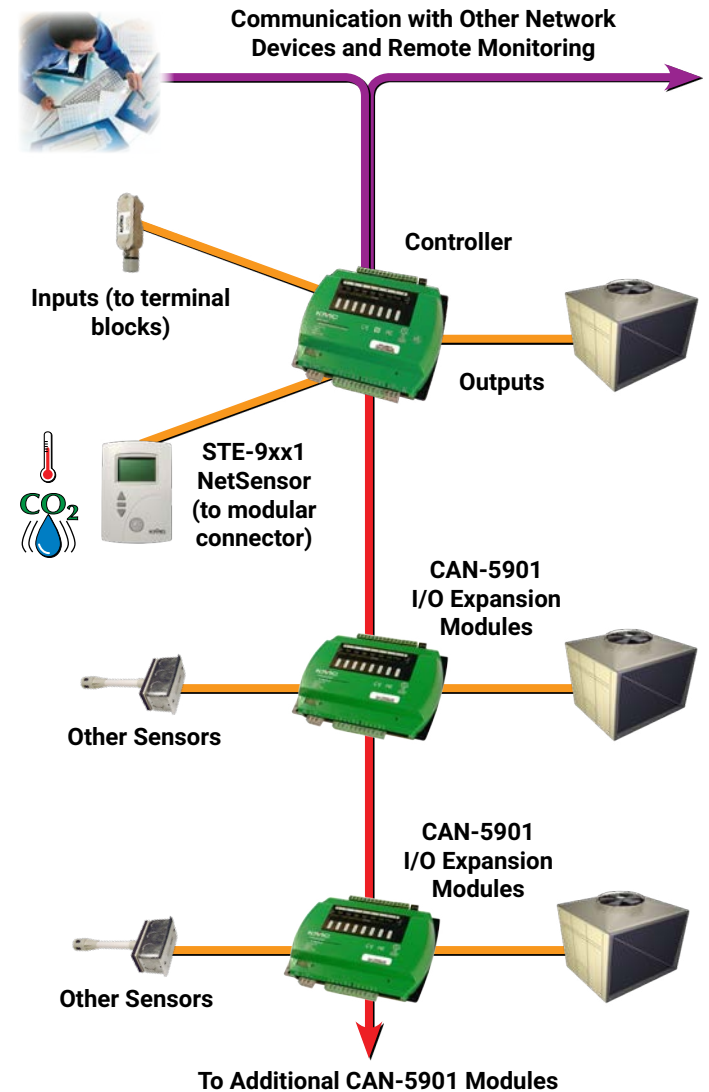| | |
|---|---|
| **HCO-1102** | Steel control enclosure, 10.1 x 2.4 x 7.1 inches (257 x 62 x 181 mm) |
| **HPO-0055** | Replacement network bulb assembly (pack of 5) |
| **HPO-0063** | Replacement output (override board) jumper, 2-pin (pack of 5) |
| **HPO-9901** | Controller replacement parts kit with terminal blocks and DIN clips |

## Output Override Boards

| | |
|---|---|
| **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) |

## Transformers, 120 to 24 VAC

| | |
|---|---|
| **XEE-6111-050** | 50 VA, single-hub |
| **XEE-6112-050** | 50 VA, dual-hub |

# SAMPLE INSTALLATION



**Communication with Other Network Devices and Remote Monitoring**

**Controller**

**Inputs (to terminal blocks)**

**Outputs**

**STE-9xx1 NetSensor (to modular connector)**

**CAN-5901 I/O Expansion Modules**

**Other Sensors**

**CAN-5901 I/O Expansion Modules**

**Other Sensors**

**To Additional CAN-5901 Modules**

For more information about installation and operation, see:

- **CAN-5901 Expansion I/O Module Installation Guide**
- **KMC Conquest Controller Application Guide**

# SUPPORT

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