INTRODUCTION

Complete the following steps to install a KMC Conquest™ CAN-5901 Expansion Module that will be connected to a Conquest BAC-5900 Series Controller. For CAN-5901 specifications, see the data sheet at kmccontrols.com. For additional information, see the KMC Conquest Controller Application Guide.

MOUNT THE CAN-5901

NOTE: Install the CAN-5901 in a metal enclosure for RF shielding and physical protection.

NOTE: To mount the CAN-5901 with screws on a flat surface, complete the steps in On a Flat Surface on page 1. Or to mount the CAN-5901 on a 35 mm DIN rail (such as integrated in an HCO-1103 enclosure), complete the steps in On a DIN Rail on page 1.

On a Flat Surface

1. Position the CAN-5901 so that the color-coded terminal blocks are easy to access for wiring.

   NOTE: The black terminals are for power. The green terminals are for inputs and outputs. The gray terminals are for communication.

2. Screw a #6 sheet metal screw through each corner of the CAN-5901.

On a DIN Rail

1. Position the DIN rail so that when the CAN-5901 is installed the color-coded terminal blocks are easy to access for wiring.

2. Pull out the DIN Latch until it clicks once.

3. Position the CAN-5901 so that the top four tabs of the back channel rest on the DIN rail.

4. Lower the CAN-5901 against the DIN rail.

5. Push in the DIN Latch to engage the DIN rail.
NOTE: To remove the CAN-5901, pull the DIN Latch out until it clicks once and lift the CAN-5901 off the DIN rail.

CONNECT THE BAC-5900 CONTROLLER

NOTE: Four CAN-5901 expansion modules can be connected in series (daisy chained) to a BAC-5900 series controller to add additional inputs and outputs.

1. Wire the gray EIO (Expansion Input Output) terminal block of the CAN-5901 to the gray EIO terminal block of the BAC-5900 series controller.

NOTE: The CAN-5901 can be installed up to 200 feet (61 meters) away from the BAC-5900 controller. Up to four CAN-5901s can be used.

NOTE: Use 18 gauge AWG shielded twisted pair cable with maximum capacitance of 51 picofarads per foot (0.3 meters) for all network wiring (Belden cable #82760 or equivalent).

A. Connect the – terminals in parallel with all other – terminals on the EIO network.

B. Connect the + terminals in parallel with all other + terminals on the EIO network.

C. Connect the shields of the cable together at each device using a wire nut or the S terminal on the controllers or modules.

2. Connect the cable shield to a good earth ground at one end only.

ADDRESS THE CAN-5901 MODULES

The address switches are used to identify the CAN-5901’s inputs and outputs.

NOTE: When only one CAN-5901 is used, the address 1 (factory default) does not need to be changed. See the table below.
### INPUTS AND OUTPUTS ADDRESSES

<table>
<thead>
<tr>
<th>Module</th>
<th>Inputs</th>
<th>Outputs</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller</td>
<td>3–10</td>
<td>1–8</td>
<td>0</td>
</tr>
<tr>
<td>EIO_1</td>
<td>11–18</td>
<td>9–16</td>
<td>1 (default)</td>
</tr>
<tr>
<td>EIO_2</td>
<td>19–26</td>
<td>17–24</td>
<td>2</td>
</tr>
<tr>
<td>EIO_3</td>
<td>27–34</td>
<td>25–32</td>
<td>3</td>
</tr>
<tr>
<td>EIO_4</td>
<td>35–42</td>
<td>33–40</td>
<td>4</td>
</tr>
</tbody>
</table>

**NOTE:** Switch 4 should always be up (Off). Switches 1 through 3 should be configured for the appropriate address as shown in the graphic below.

### CONNECT AUXILIARY EQUIPMENT

**NOTE:** Auxiliary VAV equipment such as fans, heaters, reheat valves, and discharge air temperature sensors can be connected to the CAN-5901.

1. Verify the CAN-5901 is not connected to power.
2. Connect additional sensors to the green (input) terminals.

### SET END OF LINE (EOL) SWITCH

**NOTE:** The EOL switch is shipped from KMC in the OFF position.

1. If the CAN-5901 or controller is at either end of the EIO network (only one wire under the terminals), turn the EOL switch to ON.

**CAUTION**

Do NOT connect 24 VAC to any output without first installing an HPO-6701, HPO-6703, or HPO-6705 override board first!

**NOTE:** Wire sizes 12–24 AWG can be clamped in each terminal.

**NOTE:** No more than two 16 AWG wires can be joined at a common point.

3. Connect additional equipment to the green (output) terminals.
INSTALL (OPT.) OVERRIDE BOARDS

NOTE: Install (optional) output override boards for enhanced output options, such as manual control, using large relays, or for devices that cannot be powered directly from a standard output.

1. Verify the CAN-5901 is not connected to power.

CAUTION
Connecting 24 VAC before an override board is installed will damage the CAN-5901.

CAUTION
Connecting signals that exceed the operation specifications of the CAN-5901 may damage it.

2. Open the plastic cover 13.

3. Remove the jumper 14 from the slot where the override board will be installed.

NOTE: Each of the eight override slots ships from KMC with a jumper installed on the two pins closest to the output terminal blocks. Only remove a jumper if an override board will be installed.

4. Install the override board in the slot from which the jumper was removed 15.

NOTE: Position the board with the selection switch 16 towards the top of the CAN-5901.

5. Close the plastic cover.

6. Move the A-O-H selection switch 17 on the override board to the appropriate position.

NOTE: A = Automatic
O = Off
H = Hand (Manual On)

NOTE: For more information about output override boards see the HPO-6700 Series.

7. Wire the output device to the corresponding green (output) terminal block 18 of the override board.
NOTE: Wire the HPO-6701 triac and HPO-6703/6705 relay output override boards to the (Switched Common) SC terminal—not the (Ground Common) GND terminal.

CONNECT POWER

NOTE: Connect only one CAN-5901 to each 24 VAC, Class-2 transformer with 12–24 AWG copper wire.

NOTE: The CAN-5901 is controlled by the BAC-5900 series controller. If they are on separate electrical circuits, the possibility exists that power could fail to the controller but remain on to the CAN-5901. Having the transformers for the controller and all CAN-5901s on the same electrical circuit is recommended.

NOTE: If the CAN-5901 loses EIO communication with the BAC-5900 series controller, the CAN-5901 turns all of its outputs OFF after about 30 seconds. When communication is restored, the outputs will go to whatever state the controller is commanding them to be at that time.

CAUTION

If the CAN-5901 will control a device that has a minimum required “off” time (e.g., a large compressor), for proper operation after a power failure, power the CAN-5901 from the same electrical circuit as the connected BAC-5900 series controller. The CAN-5901 should restart at the same time as the controller after a power failure.

NOTE: Follow all local regulations and wiring codes.

NOTE: Use either shielded connecting cables or enclose all cables in conduit to maintain RF emissions specifications.

8. Connect a 24 VAC, Class-2 transformer to the black power terminal block 19 of the CAN-5901.

A. Connect the neutral side of the transformer to the common terminal 20.
B. Connect the AC phase side of the transformer to the phase terminal 21.

POWER AND COMMUNICATION STATUS

The status LEDs indicate power connection and network communication.

NOTE: If both the READY and EIO LEDs remain OFF, check the power and connections to the controller.
READY LED  

After controller power-up or restart is complete, the READY LED flashes steadily about once per second, indicating normal operation.

EIO COMM LED  

The EIO communication status LED next to the network bulb assembly indicates EIO network communication with the BAC-5900 series controller. The LED flickers as it receives and passes the token:

- The COMM LED is flashing when the CAN-5901 is communicating with the EIO network.
- The COMM LED is solid ON when the CAN-5901 is not communicating with the EIO network. Check the EIO network connection.

NOTE: For more information, see the CAN-5900 Series Expansion Modules section in the KMC Conquest Controller Application Guide.

NETWORK ISOLATION BULBS  

The two network isolation bulbs serve three functions:

- Removing the (HPO-0055) bulb assembly opens the EIO circuit and isolates the CAN-5901 from the network.
- If one or both bulbs are ON, the network is improperly phased. This means the ground potential of the CAN-5901 is not the same as other modules or the controller on the network. If this happens, fix the wiring. (See Connect the BAC-5900 Controller on page 2.)
- If the voltage or current on the network exceeds safe levels, the bulbs blow, opening the circuit. If this happens, fix the problem and replace the bulb assembly.

REPLACEMENT PARTS  

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPO-0055</td>
<td>Replacement Network Bulb Module for Conquest Controllers, Pack of 5</td>
</tr>
<tr>
<td>HPO-9901</td>
<td>Conquest Hardware Replacement Parts Kit</td>
</tr>
</tbody>
</table>

NOTE: HPO-9901 includes the following:

<table>
<thead>
<tr>
<th>Terminal Blocks</th>
<th>DIN Clips</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Black 2 Position</td>
<td>(2) Small</td>
</tr>
<tr>
<td>(2) Grey 3 Position</td>
<td>(1) Large</td>
</tr>
<tr>
<td>(2) Green 3 Position</td>
<td>(2) Green 5 Position</td>
</tr>
<tr>
<td>(4) Green 4 Position</td>
<td>(2) Green 6 Position</td>
</tr>
</tbody>
</table>

NOTE: See the Conquest Selection Guide for more information about replacement parts and accessories.
**SAMPLE (CAN-5901) WIRING**

*(General Purpose Applications with Input/Output Expansion)*

**NOTE:** For information on BAC-5900 connections, see the information in the installation guide for the BAC-5900 series controllers.

**NOTE:** See the KMC Conquest Controller Application Guide for information about switched commons (SC), using VDC power, and other issues.

**CAUTION:** Do NOT connect 24 VAC to the outputs unless an HPO-6701, HPO-6703, or HPO-6705 are installed!

**NOTE:** For information about connecting outputs and output override boards, see the information in the installation guide for the BAC-5900 series controllers.

**NOTE:** The CAN-5901 does not have a Room Sensor port (unlike Conquest BAC-59xx/9xxx controllers).

**NOTE:** For **EIO** wiring, turn the End Of Line switch ON at both physical ends of the network (one wire under each terminal). Connect the cable shield to earth ground at only one point.

**NOTE:** Up to four 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.
CAN-5901 CONFIGURATION

Input and output objects for the CAN-5901 are **not** automatically created in the controller. Use KMC Connect, KMC Converge, or TotalControl to create and configure input objects 11 and higher and output objects 9 and higher in the **connected BAC-5900 series controller**. (A CAN-5901 does not appear in the Network Manager of KMC Connect, KMC Converge, or TotalControl.) For more information, see the documents or help systems for the respective KMC software tool.

IMPORTANT NOTICES

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