

CONTENTS

Introduction	1
Mount Controller.....	1
Connect Sensors and Equipment	2
Install (Optional) Override Boards.....	3
Connect (Opt.) Expansion Modules	4
Connect Ethernet Network	4
Factory Default Settings.....	4
Connecting Using USB (Optional).....	5
Setting the End Of Line (EOL) Jumper.....	5
Connect Power	5
Power and Communication Status.....	6
Sample KMN-5901E Wiring.....	8
Replacement Parts	9
Important Notices	9

INTRODUCTION

Complete the following steps to install a KMN-5900E Series General Purpose Controller. For controller specifications, see the [KMC Fusion Data Sheet](#). For additional information, see the [KMC Fusion Controller Application Guide](#).

MOUNT CONTROLLER

NOTE: Mount the controller inside a metal enclosure for RF shielding and physical protection. Input accuracy can be directly affected by both internal and external factors. Pay close attention to installation best practices: Mount product and temperature measuring devices and other input devices away from outside walls and drafts that can interfere with accurate measurements.

NOTE: To mount the controller with screws on a flat surface, complete the steps in [On a Flat Surface on page 1](#). Or, to mount the controller 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 controller on a flat surface so that the color-coded **terminal blocks 1** are easy to access for wiring after the controller is mounted.

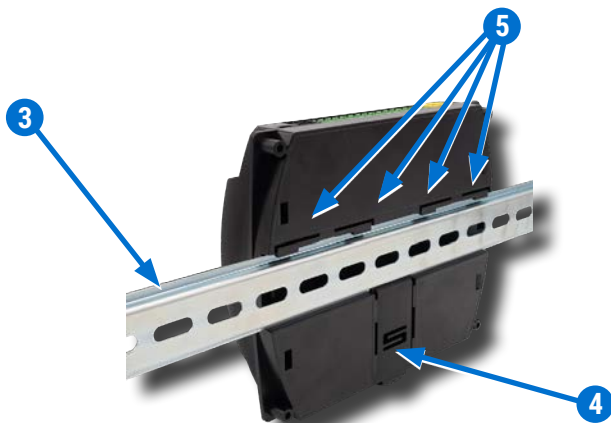
NOTE: The black terminals are for power. The green terminals are for inputs and outputs. The gray terminals are for communication.

2. Secure a #6 sheet metal screw through each **corner 2** of the controller.



On a DIN Rail

1. Position the **DIN rail 3** so that the color-coded terminal blocks are easy to access for wiring after the controller is mounted.
2. Pull out the **DIN latch 4** until it clicks once.
3. Position the controller so that the top **four tabs 5** of the back channel rest on the DIN rail.



4. Lower the controller against the DIN rail.
5. Push in the **DIN latch** 6 to engage the rail.

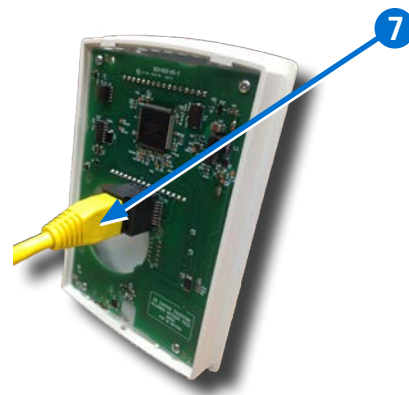
NOTE: To remove the controller, pull the DIN latch until it clicks once and lift the controller off the DIN rail.



CONNECT SENSORS AND EQUIPMENT

NOTE: See [Sample KMN-5901E Wiring on page 8](#) for more information.

1. Plug an **Ethernet patch cable** 7 connected to an STE-9000 Series or STE-6010/6014/6017 sensor into the (yellow) **ROOM SENSOR** port 8 of the controller.



NOTE: The Ethernet patch cable should be a maximum of 150 feet (45 meters).

⚠ CAUTION

Do NOT plug a cable meant for Ethernet communications into the Room Sensor port! The Room Sensor port powers a NetSensor, and the supplied voltage may damage an Ethernet switch or router.



2. Verify the controller is not connected to power.
3. Wire any additional sensors to the **green (input) terminal blocks** 9. See [Sample KMN-5901E Wiring on page 8](#).

NOTE: Wire sizes 12–24 AWG can be clamped together into each terminal.

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



4. Connect equipment to the **green (output) terminals** 10. See [Sample KMN-5901E Wiring on page 8](#)

⚠ CAUTION

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

INSTALL (OPTIONAL) OVERRIDE BOARDS

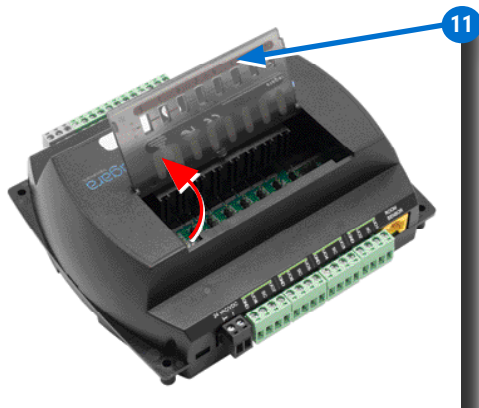
Install output override boards for enhanced output options, such as manual control, using large relays, or for devices that cannot be powered directly from a standard output.

1. Verify the controller is not connected to power.

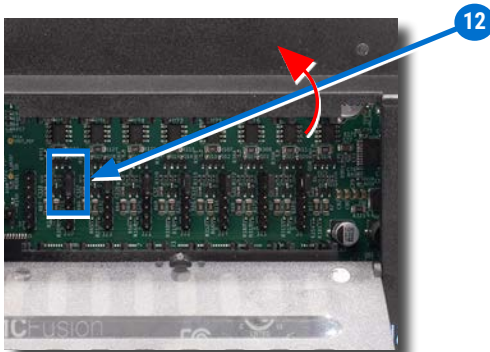
⚠ CAUTION

Connecting 24 VAC or other signals that exceed the operation specifications of the controller before an override board is installed will damage the controller.

2. Open the **plastic cover** 11.



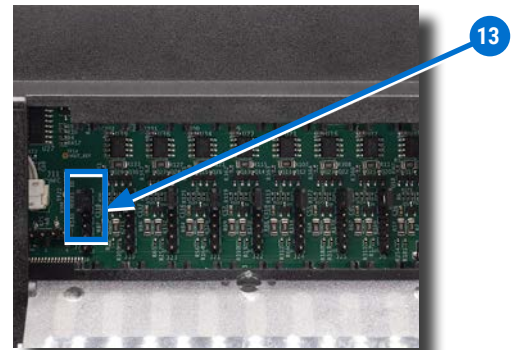
3. Remove the **jumper** 12 from the slot in which the override board will be installed.



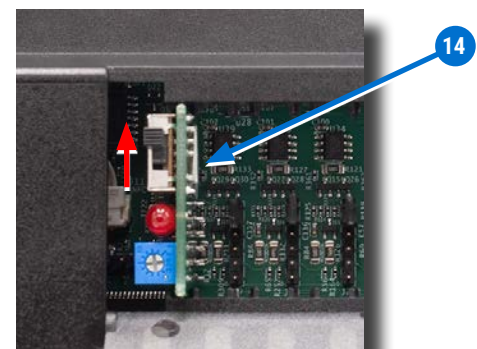
NOTE: Each of the eight override slots ships from KMC with a jumper installed on the two pins closest to the output terminal blocks. **Only remove a jumper if an override board will be installed.**

4. Install the override board in the slot in which the

jumper was removed 13.



NOTE: Position the board with the **selection switch** 14 towards the top of the controller.



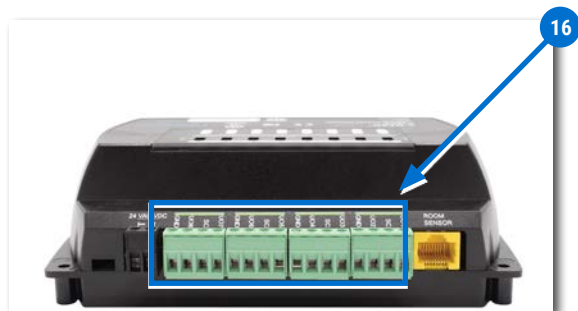
5. Close the plastic cover.
6. Move the **H-O-A selection switch** 15 on the override board to the appropriate position.

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



NOTE: For more information, see the **HPO-6700 Series** Installation Guide.

7. Wire the output device to the corresponding **green (output) terminal block** 16 of the override board.



NOTE: HPO-6701 triac and HPO-6703/6705 relay board circuits use the Switched Common **SC** terminal—not the Ground Common **GND** terminal.

NOTE: HPO-6701 triac outputs are for 24 VAC only.

CONNECT (OPT.) EXPANSION MODULES

NOTE: Up to four CAN-5900-FSN series I/O expansion modules can be connected in series (daisy-chained) to a KMN-5900-Series controller to add additional inputs and outputs.

1. Wire the **gray EIO (Expansion Input Output) terminal block 17** of the KMN-5900E series controller to the **gray EIO terminal block** of the CAN-5900-FSN series expansion module(s).

NOTE: See the [CAN-5900-FSN Series I/O Expansion Module Installation Guide](#) for details.



CONNECT ETHERNET NETWORK

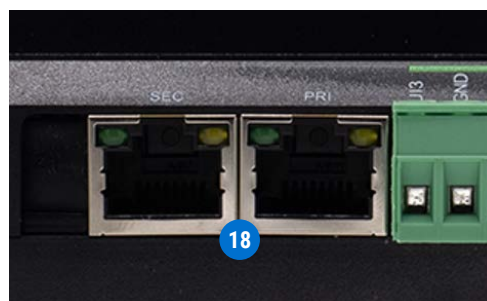
1. Connect an **Ethernet patch cable** to a **10/100 ETHERNET port 18**.

⚠ CAUTION

Do NOT plug a cable meant for Ethernet communications into the Room Sensor port! The Room Sensor port powers a NetSensor, and the supplied voltage may damage an Ethernet switch or router.

NOTE: The Ethernet patch cable should be T568B Category 5 or better and a maximum of 328 feet (100 meters) between devices.

NOTE: The KMN-5900E series have **dual Ethernet ports**, enabling daisy-chaining of controllers. Software configuration is required for this.



FACTORY DEFAULT SETTINGS

Upon initial setup, the KMN-5900E Series controller is set to:

Static IP address: *192.168.1.150*

Default subnet mask: *255.255.255.0*

NOTE: This is for the Primary (PRI) network port's initial setup.

The default passphrase for KMN-5900E Series controllers is: *niagara*

The default platform credentials are username: *kmc*

The default password is: *controls*

WARNING! Upon configuration you are prompted to enter a new passphrase and credentials. The passphrase and credentials you create are unrecoverable and you cannot reset them; document your changes securely and properly for future access.

CONNECTING USING USB (OPTIONAL)

1. Use a USB-C cable to connect the computer to the USB-C **19** port on the KMN-5900E Series controller, for access to shell- level device processes.



2. In Telnet/SSH client software, enter the following port connection settings:
 - Speed: 115,200
 - Data: 8
 - Parity: None
 - Stop bits: 1
 - Flow Control: None

SETTING THE END OF LINE (EOL) JUMPER

NOTE: Controllers are shipped by KMC with the EOL jumper in the ON position.

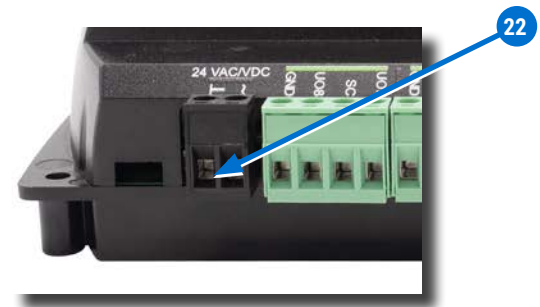
1. If the controller is NOT at the end of an **EIO** (Expansion Input Output) network line, switch the jumper to the OFF position. **20**.



CONNECT POWER

NOTE: Follow all local regulations and wiring codes.

1. Connect a 24 VAC, Class-2 transformer to the **black power terminal block 22** of the controller.



- A. Connect the neutral side of the transformer to the controller's **common terminal 23**.
- B. Connect the AC phase side of the transformer to the controller's **phase terminal 24**.



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

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

NOTE: For more information, see [Sample KMN-5901E Wiring on page 8](#).

POWER AND COMMUNICATION STATUS

Status LED (Green) 25

The Status LED has the following states:

OFF

Indicates no power to the device, or when the controller is not powered properly or is not powered with the adequate voltage.

SLOW BLINK (1 sec ON, 1 sec OFF)

Slow blink provides a device "heartbeat", indicating normal operation. This is achieved by the Niagara Station writing a "Slow Blink" value to the I/O processor providing visual feedback of a properly running and communicating station.

NOTE: Proper setup of the Hardware Network is required to achieve this state.

FAST BLINK (250ms Flash)

Fast blink indicates the device is powered and is in a state where it should be left alone and not be power-cycled, such as when a new version of Niagara is being loaded to the device.

WARNING! During this state, **DO NOT** attempt a connection to the device as normal operation is not present. **DO NOT** cut or remove power to the device, as it might be in an OS upgrade process. Power-cycling during this process can damage the device!

Solid – Steady-on

Steady-on indicates that no communication between the Niagara station and the I/O processor is present on the device.

NOTE: When the LED cycles to the solid state, the Maintain Output Timer is activated (if configured in the station). After the configured time expires, the outputs are commanded to their default state.

Status LED Operation Examples

The following examples are for illustration and testing purposes. Based on the operation states, these states should cycle through with respective time delays for the various on-going processes.

Standard boot cycle to running state:

- No Power LED OFF
- Power Applied LED FAST BLINK
NOTE: Outputs revert to the programmed default value.
- Station Running LED SLOW BLINK

Station failure from a running state:

- Station Running LED SLOW BLINK
NOTE: Outputs at commanded state from Niagara station.
- Station Failed LED SOLID
NOTE: Outputs will relinquish to programmed default value after the configured maintain timer interval expires.

Station restart/reboot (soft reboot) from a running state, for a period of time that does not exceed the programmed Maintain Output State timer:

- Station Running LED SLOW BLINK
- Station Restart LED SOLID
- Station Running LED SLOW BLINK
NOTE: Outputs remain in the last commanded state as the restart/reboot time did NOT exceed timer.

Device power cycle (hard reboot) from a running state:

- Station Running LED SLOW BLINK
- Power Loss LED OFF
- Device Restart LED FAST BLINK
NOTE: Outputs revert to the programmed default value immediately upon I/O processor startup.
- Station Running LED SLOW BLINK
NOTE: Outputs will operate to their commanded state from the Niagara station.

COMM (EIO) LED (Green) 27

The **Expansion Input Output (EIO) status LED** indicates EIO network communication with one or more CAN-5900 series expansion modules. After controller power-up or restart, the LED flickers as it receives and passes the token:

- The EIO LED flashes when the controller is communicating with the EIO network
- The EIO LED remains OFF when the (powered) controller is **not** communicating with the EIO network. Check the power and EIO network connections.

NOTE: See the [CAN-5900-FSN Series I/O Expansion Module Installation Guide](#) for more information.



Amber ETHERNET LED 29

The amber **Ethernet status LED** flashes or remains off to indicate the presence of network communication and rate.

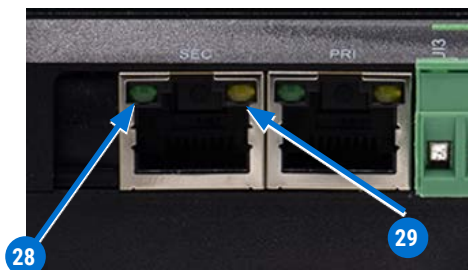
- The amber Ethernet LED flashes when the controller is communicating with a 100BaseT Ethernet network.
- The amber Ethernet LED remains OFF when the (powered) controller is communicating with network at only 10 Mbps (instead of 100 Mbps)

NOTE: If both the green and amber Ethernet LEDs remain OFF, check the power and network cable connections.

Green ETHERNET LED 28

The green **Ethernet status LED** indicates network connection and communication.

- The green Ethernet LED is ON when the controller is communicating with the network.
- The green Ethernet LED is OFF when the (powered) controller is **not** communicating with the network.



SAMPLE KMN-5901E WIRING

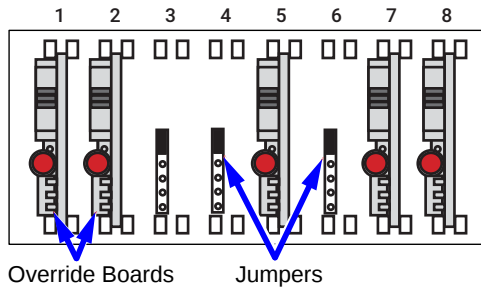
(General Purpose Applications)

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

NOTE: Connect the **STE-9xxx** (or **STE-6010/6014/6017** with no ventilation control) sensor to the Room Sensor port using a max. of 150 feet of Ethernet patch cable.

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

NOTE: To use an **override board** instead of the default universal output, remove the jumper and insert a board in that slot. For more information, see the installation guide for the HPO-6700 output override board series.



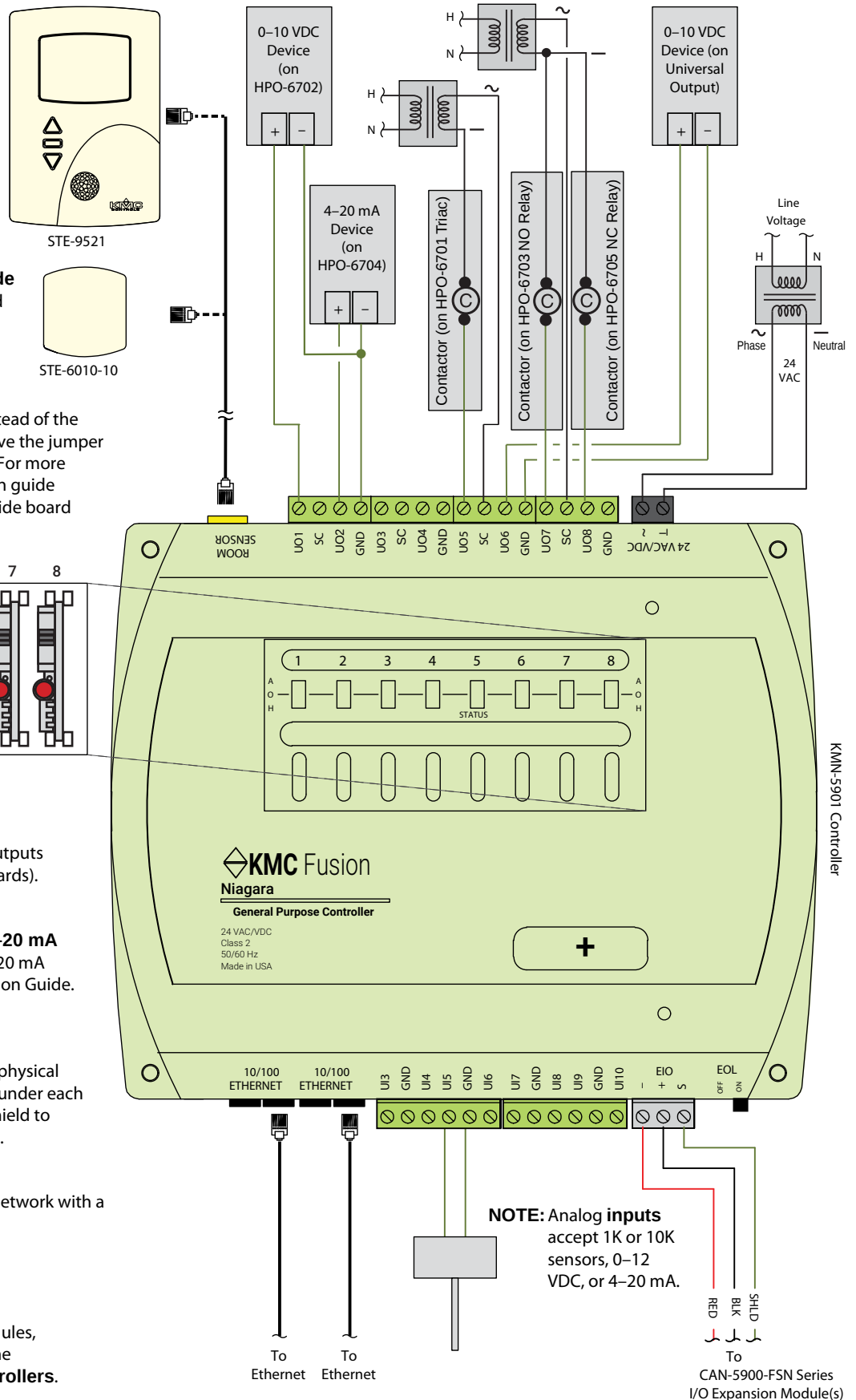
NOTE: Use 24 VAC (only) with triac outputs (HPO-6701 output override boards).

NOTE: For more information about 4–20 mA inputs and outputs, see the 4–20 mA Wiring for Controllers Application Guide.

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: Connect the controller to the network with a standard Ethernet patch cord.

NOTE: For more information about connections to expansion modules, see the installation guide for the **CAN-5900-FSN Series controllers**.



NOTE: Analog inputs accept 1K or 10K sensors, 0–12 VDC, or 4–20 mA.

REPLACEMENT PARTS

HPO-9901 Hardware Replacement
Parts Kit

NOTE: HPO-9901 includes the following:

Terminal Blocks	DIN Clips
(1) Black 2 Position	(2) Small
(2) Grey 3 Position	(1) Large
(2) Green 3 Position	
(4) Green 4 Position	
(2) Green 5 Position	
(2) Green 6 Position	

NOTE: See the **KMC Fusion Selection Guide** for more information about replacement parts and accessories.

IMPORTANT NOTICES

The material in this document is for information purposes only. The contents and the product it describes are subject to change without notice.

KMC Controls, Inc. makes no representations or warranties with respect to this document. In no event shall KMC Controls, Inc. be liable for any damages, direct, or incidental, arising out of or related to the use of this document.

The KMC logo is a registered trademark of KMC Controls, Inc. All rights reserved.

TEL: 574.831.5250

FAX: 574.831.5252

EMAIL: info@kmccontrols.com

