



## Installation Instructions

Part Number 33CSZRP-06


**IMPORTANT:** Read entire instructions before starting the installation.

### PACKAGE CONTENTS

ITEM	QUANTITY
Universal Relay Pack	1
Screws	4
Wire Nuts	11

### SAFETY CONSIDERATIONS

Read and follow manufacturer instructions carefully. Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes. Improper wiring or installation may damage relay pack.

Recognize safety information. This is the safety alert symbol . When the safety alert symbol is present on equipment or in the instruction manual, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety alert symbol. DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies a hazard which could result in personal injury or death. CAUTION is used to identify unsafe practices which would result in minor personal injury or property damage.

### GENERAL

The universal relay pack is used in VVT<sup>®</sup> (variable volume/variable temperature) systems as an interface between the HVAC (heating, ventilation, and air conditioning) unit and the damper actuator. The universal relay pack is used on Cooling Only, Heating/Cooling, and Heat Pump units. The universal relay pack is not used in Monitor-Only applications. The universal relay pack is also used for supplemental heat and fan relays on zone controllers.

### INSTALLATION

**Step 1 — Relay Pack Location** — The relay pack can be mounted either in the damper actuator or in an accessory remote enclosure at a remote location not more than 100 ft from the zone damper actuator.

The operating environment for the relay pack is 32 to 158 F (0° to 70 C) at a non-condensing humidity of 10 to 95%.

**Step 2 — Wiring Requirements** — The universal relay pack wiring has the following requirements:

All system wiring must be in compliance with all applicable local and national codes.

All control, communication bus, and sensor wiring should be color coded in conformance with Carrier recommendations.

### CAUTION

Each unused wire should be individually capped with a wire nut. Do not leave bare exposed wires. Electric shock can cause injury or death.

**IMPORTANT:** Do not run the thermostat network and control wire in the same conduit for more than 5 ft. Never run wires near any cable carrying AC voltage. Interference to signal may result.

### CAUTION

Do not ground the shielded wire in more than one location. If the shield is grounded in two or more locations, an electrical charge may form around the wire and disrupt communication.

**RELAY PACK TO HVAC UNIT** — All wiring must be 4-, 7-, or 9-conductor, 18-gage, wire depending on application and type of unit. The maximum distance between the HVAC unit to the relay pack for 18-gage wire is 100 ft.

**RELAY PACK TO FAN MIXING BOX OR SUPPLEMENTAL HEAT** — All wiring must be 4- or 6-conductor, 18-gage, wire depending on application and type of unit. The maximum distance between the mixing box or supplemental heat to the relay pack for 18-gage wire is 100 ft.

**RELAY PACK TO DAMPER ACTUATOR** — A 2-conductor power cable and 7-conductor relay connector cable are factory-installed on the universal relay pack. If the universal relay pack is being installed inside the actuator, no field-supplied wiring is required.

If the universal relay pack is being installed in a remote location, the 2-conductor power cable and 7-conductor relay connector cable will need to be cut to add additional length to the cable. Use 18-gage wire (standard or plenum rated) to extend the factory-supplied cables. The maximum distance between the relay pack and damper actuator for 18-gage wire is 100 ft.

### Step 3 — Install Relay Pack

#### DAMPER MOUNT

**IMPORTANT:** Before installing the relay pack make sure the damper shaft will not come in contact with the relay pack once it is installed inside the actuator cover. If the shaft touches the relay pack, the damper shaft must be cut to bring it flush with the sleeve of the actuator.

1. Remove cover from actuator by removing two screws on sides of actuator. Save screws.
2. Locate the four standoffs inside the actuator cover which have the plastic inserts inside. (The holes will be smaller.) See Fig. 1. Align the relay pack, with the four screw holes over the standoffs with the smaller holes. Be sure 11-pin connector is at the bottom of the cover, near the knockout. See Fig. 2.
3. Secure the relay pack in place using the 4 Phillips head screws provided with the relay pack
4. Connect the 2-pin power wire harness on the relay pack to the power terminal on the actuator. See Fig. 3.
5. Connect the 7-pin connector of the wiring harness provided with the relay pack to the 7-pin connection on the relay pack (the connector at the same end of the relay pack as the 24 vac connector) and to the 7-pin terminal on the actuator (directly below the damper spindle). See Fig. 3.
6. Connect the relay pack output harness to the output connector on the relay pack, then thread the pigtail through the grommet at the bottom of the actuator.
7. Connect the relay pack output harness to the appropriate colored wires from the HVAC equipment using field-supplied wire nuts. See Step 4 — Equipment Wiring Section.
8. Replace cover on actuator and reinstall cover using 2 screws from Step 1.

**REMOTE MOUNT** — To install universal relay pack in a remote mounted location, perform the following procedure:

1. The 2-conductor power cable and 7-conductor relay connector cable will need to be cut to add additional length to the cable. Cut the relay pack 7-conductor relay cable and 2-conductor power cable about 3.5-in. from the universal relay pack. Save connector plugs.
2. Remove cover from actuator by removing two screws on sides of actuator. Save screws.
3. Connect the 2-pin connector plug saved from Step 1 to the power terminal on the actuator. Strip wires.
4. Connect the 7-pin connector plug saved from Step 1 to the 7-pin connection on the on the actuator (directly below the damper spindle). Strip wires.
5. Use 18-gage wire (standard or plenum rated) to extend the factory-supplied cables. The maximum distance between the relay pack and damper actuator for 18-gage wire is 100 ft. Connect the extension wiring to the wires stripped in Steps 3 and 4. Use field-supplied wire nuts for connection. Run wiring to mounting location of universal relay pack. Replace cover onto actuator using screws from Step 2.
6. Push standoffs (provided with remote enclosure accessory) through back of remote enclosure mounting plate. See Remote Enclosure installation instructions for more information.
7. Mount remote enclosure mounting plate on wall.
8. Align universal relay pack with standoffs and push firmly down until board clicks into place.
9. Run the extension wiring from Step 5 through the grommet hole in the remote enclosure cover. Splice and wire nut the extension wiring from the damper actuator to the cables on the relay pack cut in Step 1.

10. Connect the relay pack output harness to the output connector on the relay pack, then thread the pigtail through the grommet at the bottom of the remote enclosure.
11. Connect the relay pack output harness to the appropriate colored wires from the HVAC equipment using field-supplied wire nuts. See Step 4 — Equipment Wiring Section.

## Step 4 — Equipment Wiring

### ⚠ CAUTION

If replacing an existing relay pack, be sure to replace existing 7-wire harness with 7-wire harness supplied. Reuse of old 7-wire harness could result in equipment failure or damage to unit.

### ⚠ CAUTION

Be sure to cut off exposed wire and cap the ends of wires not being used to prevent circuit from shorting out. Equipment damage or electrical shock can result.

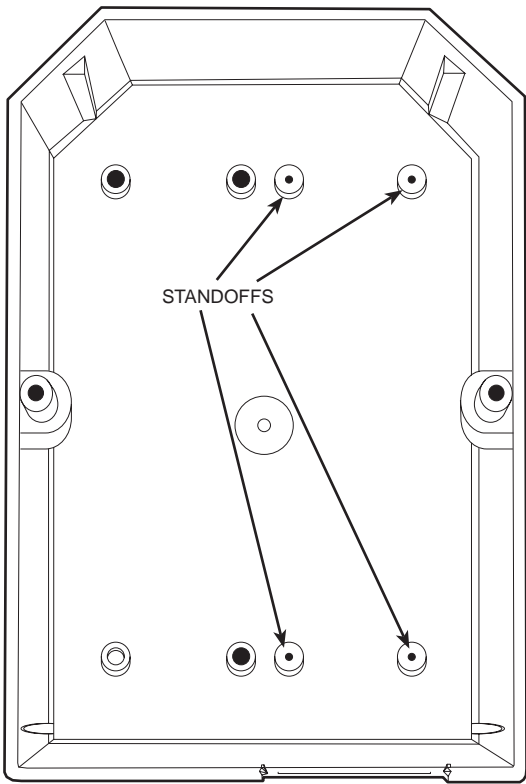
**ZONE CONTROLLER, SUPPLEMENTAL HEAT, AND FAN POWERED MIXING BOX** — If using the relay pack with a zone controller, fan powered mixing box, supplemental heat, or a local exhaust fan for local IAQ (indoor air quality), the following wiring configuration should be used:

- GREEN — Fan/Heat 3
- BROWN — Heat 2
- WHITE — Heat 1 (Normally Open)
- GRAY — Heat 1 (Normally Closed)
- PINK — 24 VAC
- ORANGE — AUX relay (Normally Open)
- BLACK — AUX relay (Normally Closed)
- VIOLET — AUX relay, 24 VAC

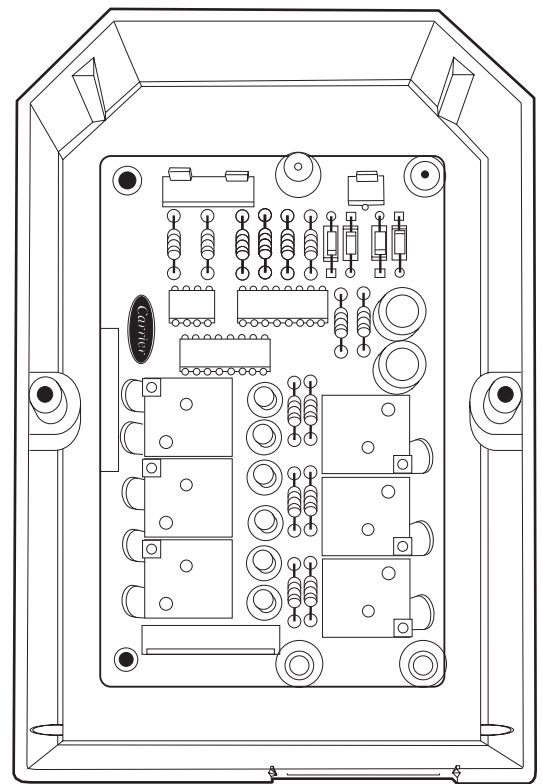
**NOTE:** This configuration should also be used if replacing an existing HR-03 relay pack.

**MONITOR THERMOSTAT** — If using the relay pack with a monitor thermostat, the following wiring configuration should be used:

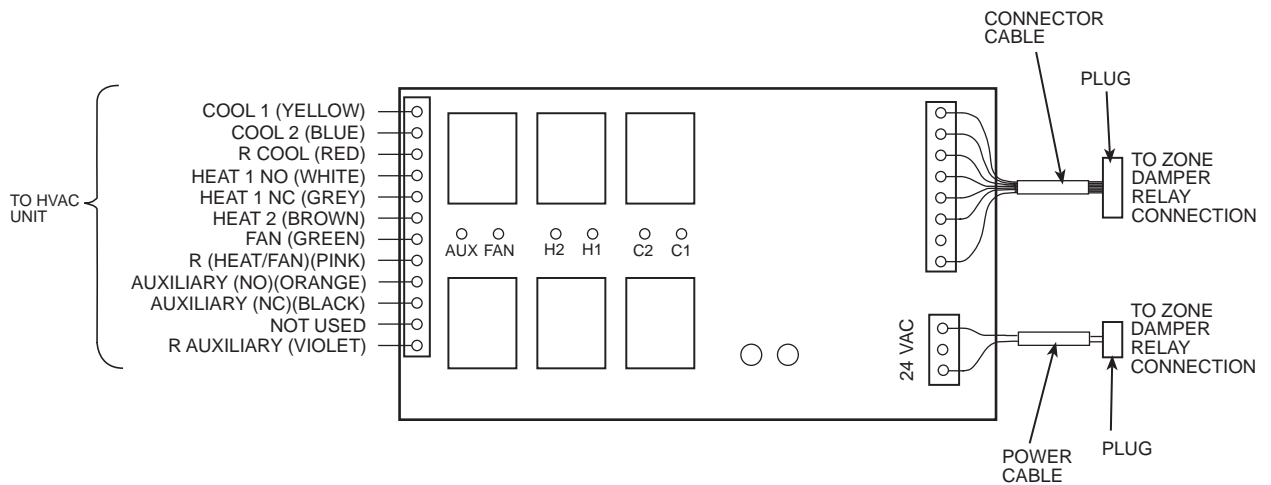
- YELLOW — Cool 1/Y1
- BLUE — Cool 2/Y2
- RED — 24 VAC/R (for cooling relays)
- WHITE — Heat 1/W1 (Normally Open)
- GRAY — Heat 1 (Normally Closed)
- BROWN — Heat 2/W2
- GREEN — Fan/G
- PINK — 24 VAC/R (for heat and fan relays)
- ORANGE — AUX/O (Normally Open, for reversing valves energized for cooling)
- BLACK — AUX/B (Normally Closed, for reversing valves energized for heating)
- VIOLET — 24 VAC/R (for AUX relay)



**Fig. 1 — Damper Actuator Cover (Inside)**



**Fig. 2 — Relay Pack Installed in Damper Actuator Cover**



**LEGEND**

- NC** — Normally Closed
- NO** — Normally Open

**Fig. 3 — Universal Relay Pack Connections**

