

# INSTALLATION INSTRUCTIONS

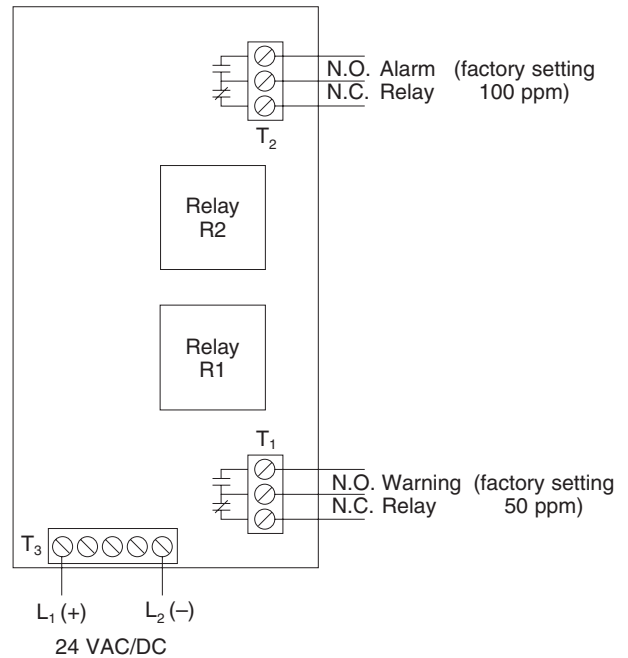
## KCO-R (RELAY OUTPUT)

### OPERATION

The **KCO-R** is a two-stage CO sensor with a relay output for each stage. There are three status LEDs: amber for warning, red for alarm, and red/green for microprocessor status.

If the CO level rises above the warning stage setpoint for over 30 seconds, the warning relay, amber warning LED, and a three-minute minimum "on" timer will activate. Once below the set point, the relay and LED will reset. If the concentration continues to rise and exceeds the alarm stage set point for 10 minutes, the alarm stage relay and red LED will activate.

The KCO-R has a two-color LED to indicate its operating status. After the sensor stabilizes, the LED flashes green, indicating operation is normal and not in alarm. When the LED is flashing red, the unit is sensing CO above its warning (50 ppm standard) setting. A continuous red or green indicates a failure of the unit. The LEDs are off during power failure.



**KCO-R**

### SPECIFICATIONS

<b>Power</b>	24 VAC/DC 260 mA (LT option 1.260A) 40 VA recommended
<b>Sensor type</b>	Solid-state metal oxide semiconductor
<b>Indicators</b>	
<b>Amber</b>	Warning
<b>Red</b>	Alarm
<b>Flashing green/red</b>	Power on, microprocessor operating
<b>Warning stage delay</b>	30 sec fixed
<b>Minimum fan on time</b>	3 minutes (Warning alarm only)
<b>Sensor range</b>	0-250 ppm
<b>Response time</b>	Under 30 sec
<b>Relay contacts</b>	Dry contact 120 VAC, 2A resistive
<b>Factory set points</b>	Warning 50 ppm, Alarm 100 ppm, adjustable
<b>Operating temp</b>	-4° to 185°F (-20° to 85°C)
<b>Low temp (LT) minimum</b>	-20°F (-29.4°C)
<b>Humidity</b>	5% to 95% noncondensing (60% recommended for calibration)
<b>Enclosure dimensions</b>	
<b>Screw cover</b>	4.81"L x 4.81"H x 2.25"D (12.2 x 12.2 x 5.7cm)
<b>Hinged cover</b>	6.125"L x 6.25"H x 3"D (15.6 x 15.9 x 7.6cm)

### INSTALLATION

1. The KCO Series senses levels of CO for up to 5,000ft<sup>2</sup> (465m<sup>2</sup>) of coverage, if there is normal air circulation within the area. Mount the unit on a wall or column approximately 5' (1.52m) above the floor. The unit should not be mounted in corners where airflow could be restricted.
2. Mount the enclosure with conduit entry that will not block the opening of the door on the hinged unit.

### WIRING

1. **Warning: Make sure wiring is not energized before making connections. Installation must comply with all local codes and ordinances.**
2. Connect 24 VAC/DC to terminal block T3. T3-1 is (+) and T3-5 is (-).
3. Connect controls and alarms to relays T1 and T2. T1 is factory set at 50 ppm and T2 is set for 100 ppm. Wiring can be connected N.O. or N.C. as shown on the circuit board. Remember the relay contacts are only rated for 2A so an interposing relay will be required for larger loads.

## WIRING (continued)

4. If the low temperature option is included, the wiring is internal. No additional wiring connection is needed.
5. Turn on the monitor power source and allow 72 hours of burn-in time before activating the control devices. Operation may be erratic during the burn-in so control is not recommended during this time.
6. After burn-in time the status LED should be flashing green to indicate normal operation. If the LED is solid red or green, please contact Kele.

## CALIBRATION NOTES

1. The unit is factory calibrated in laboratory conditions, so calibration at installation is not necessary.
2. If calibration or verification is necessary, the humidity of the test gas will affect the reading. Test gas is normally at 0% RH so moisture should be added. The test gas tubing should flow in and out of a bottle 1/2 full of water to humidify the gas. Bubbling thru the water is not necessary. Passing the gas thru a wet sponge will work, too.
3. The Kele UCK Series calibration kits will include a UCKCAP fitting that will cover the orange sensor on the board. The UCK will also include a regulator to vary the test gas flow rate.

## CALIBRATION PROCESS

The process consists of two steps; changing a circuit board jumper to eliminate all the delay timers and minimum on timers, so the pots can be set without concern over the unit timing out and then gassing the sensor to the required level.

## PRE-ADJUST SETUP

There is a three-pin header which will have a jumper for shorting two of the pins. The header has the words TD and CAL next to it. If the jumper is placed in the TD position (center post to end post), then the normal timing sequences and logic sequences take place. This is the position for normal operation. If the jumper is put in the CAL position, then all the timers and the interaction of Stages 1 and 2 are eliminated. Then calibration can be performed without having any interference. The LEDs and relays will still act as trip points are reached. Loads connected to the relays may need to be disconnected so that they do not turn on and off repeatedly.

## GASSING AND ADJUSTING

Use the following steps to verify calibration, re-calibrate, or change relay trip settings.

### STAGE 1

With the jumper in the CAL position, apply moistened gas (50 ppm CO for Stage 1 is desired) over the sensor for about 5 minutes, and then adjust pot labeled STAGE 1, to engage/disengage the relay R1 and its LED. The flow rate should be approximately 0.5 SCFH.

### STAGE 2

Using a Stage 2 gas (100 ppm carbon monoxide), and using the same gas flow rate and time as stated above, adjust pot labeled STAGE 2 for relay R2 and its LED.

After adjustment, place the jumper back to the TD position for normal timer operation. Re-powering is not required for the new jumper position take effect.