

# MODEL H2

## SINGLE CHANNEL LOOP DETECTOR



- Eight (8) levels of sensitivity
- Four (4) loop frequencies
- 2, 5, or 10 second Detect Output delay
- 2, 5, or 10 second Detect Output extension
- Sensitivity boost provides continuous detection for high-bed vehicles
- Detect Output can be configured for Fail-Safe or Fail-Secure operation
- Three (3) high intensity LEDs provide separate indications for power, detect, and loop fail
- Fail LED indicates either current or past loop failure(s)
- Dual solid state FET outputs
  - ◆ Detect
  - ◆ Fail
- Input power - 8 to 30 VDC, 45 mA (maximum)

### Overview

The Model H2 is a single channel, dual output (Detect / Fail), PC board vehicle detector incorporating reliable vehicle detection technology found in all Reno A & E vehicle detectors. All detector settings are selectable using easy access switches (DIP switch and rotary switch).



## Reno A&E

### Transportation Control Products

4655 Aircenter Circle • Reno, Nevada • 89502 • USA

Tel: (775) 826-2020 • Fax: (775) 826-9191

E-mail: [sales@renoae.com](mailto:sales@renoae.com) • Website: [www.renoae.com](http://www.renoae.com)



## MODEL H2 SPECIFICATIONS

**Self-Tuning:** The detector automatically tunes and is operational within two seconds following application of power or reset. The detector is fully self-compensating for environmental changes.

**Loop Inductance Range:** 20 to 2000 microhenries.

**Loop Feeder Length:** Up to 2500 feet with proper feeder cable and appropriate loop(s).

**Lightning Protection:** The detector's loop input can withstand, without damage, the discharge of a 10-microfarad capacitor charged to 2,000 volts.

**Loop Input:** The loop is isolated through an isolation transformer that allows operation with poor quality loops, which may include a single point short to ground.

**Loop Frequency:** The loop-operating frequency is normally in the range of 20 to 100 kilohertz. One of four loop-operating frequencies is selectable using DIP switch positions 1 & 2.

**Sensitivity:** Eight (8) sensitivity levels are selectable using an eight position rotary switch.

**Sensitivity Boost:** Sensitivity Boost is activated using DIP switch position 4. When a vehicle is detected sensitivity is automatically "boosted" to a higher level. The higher sensitivity level remains until detection is dropped, at which time the sensitivity returns to the no-detect level. This feature provides protection against dropping detection when high bed vehicles pass over the loop.

**Fail-Safe / Fail-Secure Operation:** Fail-Safe or Fail-Secure operation is selected using DIP switch position 3. When configured for Fail-Safe operation a loop fault condition forces the Detect Output to the detect state. When configured for Fail-Secure operation a loop fault condition forces the Detect Output to the no-detect state. (Changing this switch position resets the detector.)

**Output Delay Time:** An Output Delay time of zero, two, five, or ten seconds can be programmed using DIP switch positions 5 & 6. Output Delay time is the time before the Detect Output activates following vehicle detection. If the Output Delay feature is programmed to a value other than zero the Detect Output is "ON" only if a vehicle is continuously detected for the programmed delay time. If vehicle detection is lost during the delay time period the delay timer is reset to zero. The next vehicle entering the loop detection zone starts a new delay time period. The Detect LED flashes at a two Hertz rate (50% duty cycle) during the delay time period.

**Output Extension Time:** An Output Extension time of zero, two, five, or ten seconds can be programmed using DIP switch positions 7 & 8. Output Extension time is the time following the loss of detection before the Detect Output is dropped. If another vehicle enters the loop during the extension time period the extension timer is reset to zero, and a full extension time period follows the departure of the last detected vehicle. The Detect LED flashes at a four Hertz rate (50% duty cycle) during the extension time period.

**True Presence:** The detector operates in True Presence™ mode (infinite presence time). The Detect Output is "ON" as long as the vehicle is present in the loop. True Presence™ operation requires normal size loops with a minimum dimension of four feet and loop area not to exceed 120 square feet. True Presence™ operation is limited to normal size automobiles and trucks. If power is lost, or reset is applied, the detector will be reset and detection will be lost.

**Fail Output:** The Fail Output transistor is "ON" when power is present and a good loop is properly connected to the detector. If power is lost, or a loop failure exists, the Fail Output transistor is "OFF".

**Power Indicator:** The Power LED (green) is "ON" when power is present.

**Detect Indicator:** The Detect LED (red) is "OFF" when the loop is vacant. The Detect LED is continuously "ON" when a vehicle is detected and the Detect Output is "ON". During the Output Delay timing period the Detect LED flashes at a two Hertz rate (50% duty cycle) indicating a vehicle is detected, but the Detect Output is not "ON". During the Output Extension period the Detect LED flashes at a four Hertz rate (50% duty cycle) indicating detection is lost, but the Detect Output is "ON".

**Fail Indicator:** The Fail LED (red) provides loop failure information. The Fail LED is "OFF" when the loop inductance value is within tolerance, and no past out of tolerance conditions have existed. The Fail LED flashes at a one Hertz rate (50% duty cycle) when the current loop inductance value is out of tolerance. The Fail LED flashes at a rate of one flash every five seconds when a past out of tolerance loop condition has existed, but the current loop inductance value is within tolerance. This flash rate continues as long as the loop inductance value remains in tolerance. Resetting the detector clears the fail indication. **A flashing Fail LED indication suggests the possibility of an intermittent loop connection. Reno A&E highly recommends soldering all loop connections with a proper soldering iron and rosin core solder.**

**Detector Reset:** The following actions perform Detector Reset:

1. Remove and reapply power.
2. Changing Fail-Safe / Fail-Secure setting. (DIP switch position 3).
3. Momentarily connecting Pin 3 of the Molex connector to ground (0 to 2 VDC).

Detector Reset must be performed following any change in loop-operating frequency. Changes in Sensitivity, Sensitivity Boost, Delay time, or Extension time immediately take effect without the need to perform Detector Reset.

**Response Time:** 60 ±20 milliseconds.

**Solid State Outputs (Detect Output & Fail Output):** Open Drain FET transistors. Maximum Rating: 30 VDC, 100 milliamps. (33 Volt Zener protection across drain and source.)

**Power:** 8 to 30 VDC, 45 milliamps maximum.

**Operating Temperature:** -30° F to +180° F (-34° C to +82° C).

**Size:** 2.85 inches high, 2.50 inches wide, 0.85 inches deep (includes plastic cover).

**Weight:** 1.9 ounce.

**Construction:** The printed circuit board is 0.062-inch, FR4 material with 2 oz. copper with plated through holes. Circuit boards and components are conformal coated with polyurethane. A cover made of a high temperature rated plastic protects PC board mounted components.

**Connector:** Molex Part Number 09-62-3101 (10 pin female with gold plated contacts.) The connector is centered on the 2.50-inch dimension. (See Pin Assignments table.)

**Recommended Mating Connector:** Molex Part Number 41791-0857 (gold plated contacts).

### Sensitivity & -ΔL/L

| Sensitivity | 0     | 1     | 2     | 3     | 4*     | 5     | 6     | 7     |
|-------------|-------|-------|-------|-------|--------|-------|-------|-------|
| -ΔL/L       | 2.56% | 1.28% | 0.64% | 0.32% | 0.16%* | 0.08% | 0.04% | 0.02% |

\* Denotes factory default setting.

### DIP Switch Settings

| Frequency    | Low | Normal | Medium | High | Factory Default |
|--------------|-----|--------|--------|------|-----------------|
| DIP Switch 1 | ON  | OFF    | ON     | OFF  | OFF             |
| DIP Switch 2 | ON  | ON     | OFF    | OFF  | ON              |

| Mode         | Fail-Secure | Fail-Safe | Factory Default |
|--------------|-------------|-----------|-----------------|
| DIP Switch 3 | ON          | OFF       | OFF             |

| Sensitivity Boost | Boost On | Boost Off | Factory Default |
|-------------------|----------|-----------|-----------------|
| DIP Switch 4      | ON       | OFF       | OFF             |

| Output Delay | 0 Seconds | 2 Seconds | 5 Seconds | 10 Seconds | Factory Default |
|--------------|-----------|-----------|-----------|------------|-----------------|
| DIP Switch 5 | OFF       | ON        | OFF       | ON         | OFF             |
| DIP Switch 6 | OFF       | OFF       | ON        | ON         | OFF             |

| Output Extension | 0 Seconds | 2 Seconds | 5 Seconds | 10 Seconds | Factory Default |
|------------------|-----------|-----------|-----------|------------|-----------------|
| DIP Switch 7     | OFF       | ON        | OFF       | ON         | OFF             |
| DIP Switch 8     | OFF       | OFF       | ON        | ON         | OFF             |

### Pin Assignments

| Pin | Function                  |
|-----|---------------------------|
| 1   | Loop                      |
| 2   | Loop                      |
| 3   | Reset (0 to 2 VDC)        |
| 4   | No Connection             |
| 5   | No Connection             |
| 6   | Fail Output (FET Drain)   |
| 7   | Fail Output (FET Drain)   |
| 8   | Detect Output (FET Drain) |
| 9   | DC + (8 to 30 VDC)        |
| 10  | DC Common                 |