# RAD3

## THREE CHANNEL VEHICLE DETECTOR

Reliable, high quality vehicle detector that will improve the performance and life cycle of your access control system.



### FEATURES

- 3 Channels
- 4 Solid State Outputs (3 Channel, 1 Fault)
- 4 Frequency Levels
- 3 Sensitivity Levels & Channel Off
- Wide Loop Induction Range: 20 to 2500 µH
- Sensitivity Boost
- Automatic Tuning
- Lightning and Surge Protection

### HIGHLIGHTS

- Separate Color Coded LED Indicators
- Low Power Option
- Limited Presence Option (True Presence Default)
- Fail Safe / Fail Secure Configurations
- Compatible with all Radio Controls & Remote Openers
- Covers All Low Voltages
- Advanced Loop Diagnostics

meets MUTCD standards

ISO 9001 CERTIFIED

2 YEAR LIMITED WARRANTY

**Controls:** Board mounted DIP switches on the top of the board allow the user to set up frequency & sensitivity for each channel. Another four position Dip switch (Option switches) at the bottom of the board will set up Low Power, Boost, Limited Presence, and Fail-Safe or Fail-Secure operation.

**Reset (Power up):** Detector can be manually reset, press the front panel RESET button or interrupting power.

**Loop Frequency (4 Position DIP Switch for Each Channel - DIP 3 & 4):** One of four settings (normally in the range of 19 to 124 kHz) may be selected from the rear panel DIP switch to alleviate interference which may occur when loops connected to different detectors are located adjacent to one another.

**Sensitivity (4 Position DIP Switch for Each Channel– DIP 1 & 2):** The Detector offers 3 levels of sensitivity (High, Medium, and Low). If both switches are off, the channel is turned off. The factory default setting is Medium.

**Low Power:** When Option switches #1 is in the ON position, the detector will save around 30% of power consumption. The response time will be slower.

**Sensitivity Boost:** When Option switch #2 is in the ON position, the sensitivity is increased during the detect period without changing the sensitivity during the no detect period. The boost feature has the effect of temporarily increasing the sensitivity setting by up to two levels (except on Sensitivity Hi). When a vehicle enters the loop detection zone, the detector automatically boosts the sensitivity level. As soon as no vehicle is detected, the detector immediately returns to the original sensitivity level. This feature is particularly useful in preventing dropouts during the passage of high bed vehicles. The factory default setting is OFF (no Sensitivity Boost).

**Limited Presence:** The default position is Infinite Presence (Option switch #3 = OFF). In the Infinite Presence mode, a presence output will always be maintained as long as a vehicle is over the loop. In the Limited Presence mode (internal switch 3 = ON), the output hold time is between 5 minutes minimum and 3 hours maximum. Hold time

depends on loop geometry; number of wire turns in the loop, vehicle size, and position of the vehicle relative to the loop.

**Fail-Safe / Fail-Secure Operation:** Either Fail-Safe or Fail-Secure Operation is controlled by the setting of Option switch #4. The default position is Fail-Safe (switch 4 in the OFF position). If a loop fault occurs while in the Fail-Safe mode, Output A activates. If a loop fault occurs in the Fail-Secure mode (switch 4 is in the ON position) Output A will not activate. If there is a power failure, all outputs will deactivate regardless of the position of this switch.

**Detector Indicators and Loop Fault Monitoring:** The Green Power LED is continuously 'ON' on startup. When the detector passed the self-diagnostic on startup, it will flash once every 5 seconds. The detector continuously checks the integrity of the loop. The system is able to detect open or shorted circuit loops, or sudden changes in inductance exceeding 25% of the nominal inductance. If a fault is detected, the Red FAULT LED will turn on, and the Green Channel DETECT LED will continuously emit a sequence of flashes. Each type of fault is identified by a different flash sequence:

| Flash Sequence | Fault Condition |
|---|---|
| 1 flash | Open Circuit Loop |
| 2 flashes | Shorted Circuit Loop |
| 3 flashes | 25% excessive change in inductance |

If the Open or Shorted fault condition self-heals, the Green Channel DETECT LED will return to normal operation. In the case of the excessive inductance change fault, the unit will retune to the new inductance after a period of two seconds and continue operation. The Red FAULT LED will only turn off if there is no error on any of the channels.

**Loop Inductance (Tuning) Range:** 20 to 2500 micro-Henry with a Q factor greater than 5.

**Loop Input (Lightning Protection):** The loop input incorporates lightning and transient protection devices and the loop oscillator circuitry is transformer-isolated. The lightning protection will withstand the discharge of a 10 uF capacitor charged to 2,000V across the loop inputs or between either loop input and earth ground. The transformer isolation allows operation with a loop which is grounded at a single point.

**Environmental Tracking:** The Detector automatically and continuously compensates for component drift ad environmental effects throughout the turning range and across the entire temperature range.

**Grounded Loop Operation:** The Detector will operate when connected to poor quality loops including those that have a short to ground at a single point.

**Internal Circuitry Isolation:** All internal electronic circuitry is isolated from the loop by means of the loop isolation transformer.

**Lead-in Length:** The Detector will operate with lead-in (feeder) lengths up to 5,000 feet with appropriate loops and proper lead-in cable.

**Output Rating(s):** Open Collector Transistor referenced to DC Common. Max current rating 100 mAmps. Max voltage 30 VDC.

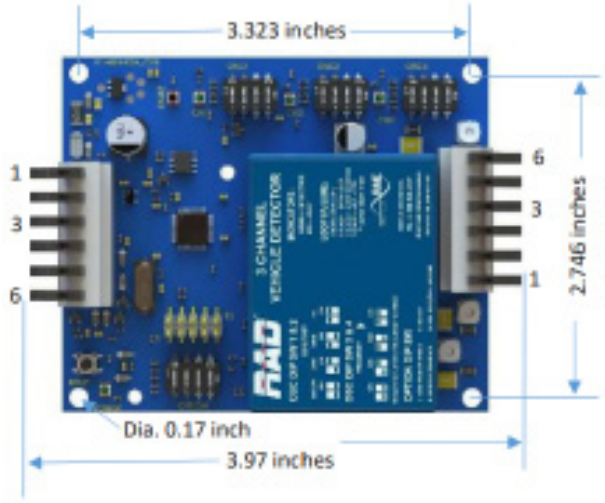
**Construction:** Printed circuit boards are double sided 1oz. copper with plated through holes. Circuit boards are conformally coated for environmental protection.

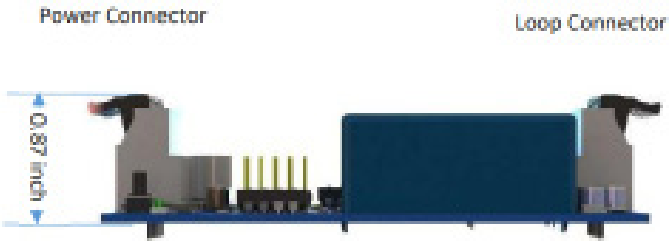
**Environmental:** Operating Temperature Range: -34ºC to +74ºC (-30ºF to 165ºF). Humidity Range: 0 to 95% relative.

**Pin Assignments:**

| Power Connector | Function | Loop Connector | Function |
|---|---|---|---|
| 1 | Power (12-24VDC, 24VAC) | 1 | Loop Open A |
| 2 | Common | 2 | Loop Open B |
| 3 | Output Open Detect | 3 | Loop Center A |
| 4 | Output Center Detect | 4 | Loop Center B |
| 5 | Output Re-Open Detect | 5 | Loop Re-Open A |
| 6 | Output Fault | 6 | Loop Re-Open B |

**Mechanical:**




**Specifications subject to local environmental conditions, and may be subject to change.**

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