RAD1

SINGLE CHANNEL
VEHICLE DETECTOR



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

FEATURES

- Dual Programmable Solid State Outputs
- 4 Sensitivity/Frequency Levels
- Automatic Tuning
- Lightning & Surge Protection
- Sensitivity Boost
- Fail Safe / Fail Secure Operation
- Separate Color Coded LED Indicators

HIGHLIGHTS

- Compatible With All Radio Controls & Remote Openers
- Wide Loop Inductance Range
- Advanced Loop Diagnostics
- Covers All Low Voltages
- 5 Second Extension
- 2 Second Delayed Detection

Controls: Front mounted DIP switch and a front panel Reset push button allow the user to set up operational parameters including frequency & sensitivity. Internal DIP switch configures Extension and Delay timing, 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 (6 Position DIP Switch - DIP 5 & 6): One of four settings (normally in the range of 19 to 124 kilohertz) 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 (6 Position DIP Switch – DIP 1 & 2): The Detector offers 4 levels of sensitivity (High, Medium-High, Medium-Low, and Low). Sensitivity can be manually set to a desired level using the rear panel DIP switch. The factory default setting is Medium-Low.

Sensitivity Boost: Automatic, sensitivity will increase only during the DETECT Output period without changing the sensitivity of a vacant loop. When a vehicle enters the loop, the Detector sensitivity is boosted to a higher level than the vacant loop setting. The boosted sensitivity remains throughout the DETECT Output period. When the vehicle leaves the loop, the sensitivity returns to the vacant loop setting. This feature helps prevent dropouts during the passage of high bed vehicles and is exceptionally useful in sliding gate situations.

Output B Modes (6 Position DIP Switch - DIP 3 & 4): Output B has 4 selectable output modes: Loop Fault, B same as A, Pulse on Exit, Pulse on Entry. For Loop Fault Mode, if the loop fails the Output B will conduct indicating the failure. For either Pulse on Entry or Pulse on Exit a 250 millisecond pulse is generated on Output B. The default position is set to Loop Fault (switch 3 = FF & switch 4 = OFF).

meets MUTCD standards

ISO 9001 CERTIFIED

2 YEAR LIMITED WARRANTY

Switch 3	Switch 4	Function
OFF	OFF	Loop Fault
OFF	ON	Pulse on vehicle Exit
ON	OFF	Presence (Same as Output A)
ON	ON	Pulse on vehicle Entry

Delay Timing (4 Position Internal DIP Switch 1): The default position is set to OFF. When internal switch 1 is in the ON position, a 2-second "detect" delay feature will delay outputs A & B for a period of 2 seconds after a vehicle has entered the detection zone. If the vehicle does not remain in the loop zone for the full 2 seconds the delay will terminate and no DETECT output will be produced. When delaying, the DETECT LED will flash in 1Hz frequency.

Extension Timing (4 Position Internal DIP Switch 2): The default position is set to OFF. When internal switch 2 is in the ON position, a 5-second "detect" extension feature will extends outputs A & B for a period of 5 seconds after a vehicle has exited the detection zone. If a vehicle has entered the loop zone during this 5 seconds the extension will terminate and outputs A & B will remain their current status. When extending, the DETECT LED will flash in 2Hz frequency.

Presence – Output A (4 Position Internal DIP Switch 3): Output A has 2 selectable output modes: Infinite Presence and Normal Presence. The default position is Infinite Presence (internal 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 Normal 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 (4 Position Internal DIP 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.

Loop Fault Monitoring: The Detector continuously checks the integrity of the loop. The system is able to detect a shorted or open circuit loop, or sudden changes in inductance exceeding 25% of the nominal inductance. If a fault is detected, the OUTPUT and POWER (Loop Fault) indicators continuously emit a sequence of flashes:

Flash Sequence	Fault
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 OUTPUT indicators 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 fault condition will then be indicated by the flash sequence of the POWER (Loop Fault) indicator. Pressing the "Reset" button will reset the Detector and clear the flash sequence from the POWER (Loop Fault) indicator.

Power (Loop Fault) Status Indicator (Green LED): Solid ON indicates normal power status during detector operation. The POWER Indicator will flash every 2 seconds during low input voltage (Brown out) conditions, indicating insufficient input voltage. The POWER indicator also serves as the Loop Fault Indicator. See "Loop Fault Monitoring" above for details.

Detect Output Status Indicator (Red LED): Vehicle Detection = Steady ON.

Loop Inductance (Tuning) Range: 20 to 2100 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.

Mechanical: Dimensions: 2.30" (5.84 cm) high x 2.5" (6.4 cm) wide x 0.80" (2.03 cm) thick. Weight: 1.50 oz (42 g).

Power Supply: 10 to 30 VDC or 14 to 26 VAC. 8 mA maximum in No Call state. 9 mA maximum in Call state.

Connector: Rear mount 10 pin male female Molex type 09-48-1104. Mates with other male PCB 0.156" pitch headers used by many gate, parking and access control devices.

Factory Default Settings:

- Sensitivity = Medium-Low
- Output A = Infinite Presence
- Output B = Fail Output
- Sensitivity Boost = Automatic
- 2-second DETECT Delay = OFF
- 5-second Extension = OFF
- Configuration = Fail Safe

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

All Eberle Design LLC. products are Designed, Manufactured and Tested in the United States of America in facilities that are certified to ISO quality standards. LEDguard, "Eberle Design Inc." and Eberle Design LLC. logo are trademarks of Eberle Design Inc. © 2026, Polara Enterprises. Document: EDI_DATA_RAD1_RevB

Pin Assignments: Power Applied on with pin 3 or 9, or both

Pin	Function
1	Loop Input
2	Loop Input
3	Power (+10 to 30 VDC or 26 VAC)
4	No Connection
5	No Connection
6	Output B
7	Output B Inverted
8	Output A (Presence Output)
9	Power (+10 to 30 VDC or 26 VAC)
10	DC Common

Specifications subject to local environmental conditions, and may be subject to change.
All Eberle Design LLC. products are Designed, Manufactured and Tested in the United States of America in facilities that are certified to ISO quality standards. LEDguard, “Eberle Design Inc.” and Eberle Design LLC. logo are trademarks of Eberle Design Inc. © 2026, Polara Enterprises. Document: EDI_DATA_RAD1_RevB