



## Model RAD

### Operating Instructions

#### Plug-in Vehicle Loop Detector

*Single Channel – Dual Solid State Outputs*

**General/Overview:**

The EDI Model RAD operates on 12 VDC, 24 VDC, and 24 VAC, and is designed for low power requirements. The detector is designed to handle gate, parking, drive-through, and all access control applications where **solid-state** outputs are required for both the “detect and “fail” outputs. From a diagnostic standpoint, RAD automatically and continuously senses three types of possible loop fault conditions: Open Loop, Shorted Loop, sudden changes in inductance exceeding 25% of the nominal inductance.

**The RAD is compatible with the following gate / parking operators:**

- All Linear Operators with APeX controller
- Advanced Access Automation/FAAC CSL2000, CSW2000, RSW1000
- All-O-Matic SL100-DC
- Chamberlain/Elite SL3000, CSW200
- Intelligate Systems IQ500, IQ5000
- SECOM Late model operators with 10-pin Molex connectors
- Rotary Gate Systems SL1000R, SL1000C, SL1000I
- TyMetal TYM 1000 , TYM 2000
- Viking Access Models L-3, F-1, T-21, H-10, B-12, Q-4



**External Dip Switch Functions (Front Panel Switches):**

**EXT Dip Switch 1 & 2 – Sensitivity:** The sensitivity is controlled by the front panel 6-Position DIP switches marked 1 and 2. For typical vehicles (mid-size vehicle / small pick up) utilizing properly installed roadway loops, a value of Medium-Low is usually an optimum sensitivity setting. For high profile vehicles (commercial trucks, 4x4's, etc...), a value of Medium-High may be optimum.

SWITCH	LoW	Medium – LoW	Medium – High	High	Factory Default
1	OFF	ON	OFF	ON	OFF
2	OFF	OFF	ON	ON	OFF

**EXT Dip Switch 3 & 4 – Output “B” Modes:** 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 = OFF & switch 4 = OFF).

SWITCH	Loop Fault	B same as A	Pulse On Exit	Pulse On Entry
3	OFF	ON	OFF	ON
4	OFF	OFF	ON	ON

**EXT Dip Switch 5 & 6 – Frequency:** The operating frequency is controlled by the setting of switches 5 & 6 of the 6 position DIP Switch. Occasionally when loops are in close proximity to each other, it may be necessary to select different frequencies for each loop detector to avoid loop interference (crosstalk). The actual loop frequency is a function of the size of the loop, number of turns of loop wire in the loop, length of the lead-in cable, and the setting of the frequency switches. The detector frequency should be adjusted so that there is a minimum of 5 kilohertz of separation between all adjacent loops. After a frequency setting change, the detector needs to be reset by either cycling the power, or pressing the RESET button.

**Internal Dip Switch Functions (On Board Switches Under the Cover):**

**INT Dip Switch 1 – Delay Timing:** 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.

**INT Dip Switch 2 – Extension Timing:** The default position is set to OFF. When internal switch 2 is in the ON position, a 5-second “detect” extension feature will extend 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.

**INT Dip Switch 3 – Output “A” Modes:** 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.

**INT Dip Switch 4 – Fail-Safe / Fail-Secure Operation:** Either Fail-Safe or Fail-Secure Operation is controlled by the setting of internal 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 Diagnostics:** 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 POWER and DETECT LED’s 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 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.

**Pin Assignments:**

Pin	Function	Pin	Function
1	Loop	6	Output B
2	Loop	7	Output B Inverted
3	Power (12-24VDC, 24VAC)	8	Output A (Presence Output)
4	No Connection	9	Power (12-24VDC, 24VAC)
5	No Connection	10	Common

Note: Power may be applied on either pin 3 or 9, or both

