

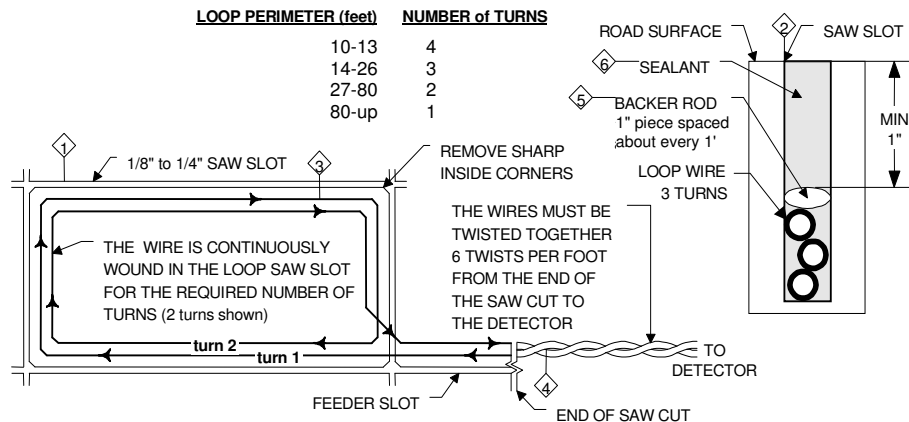
**Pin Connections: Harness Model 801-4**

PIN	HARNESS COLOR	FUNCTION
A	WHITE	POWER, NEUTRAL or (-)*
B	BROWN	OUTPUT A, NORMALLY OPEN
C	BLACK	POWER, HOT or (+)*
D	RED	LOOP
E	ORANGE	LOOP
F	YELLOW	OUTPUT A, COMMON
G	BLUE	OUTPUT A, NORMALLY CLOSED
H	GREEN	CHASSIS GROUND
I	VIOLET	OUTPUT B, COMMON
J	GRAY	OUTPUT B, NORMALLY OPEN

**NOTE:** All Contacts above are shown for power applied, loops connected and no vehicle present. The Output B (pulse relay) always operates in Fail Secure mode (i.e., NO CALL is indicated during failure conditions).  
 \* 24 VAC, 120 VAC, and 240 VAC versions of Model B detectors and 12 VDC and 24 VDC versions of Model B detectors are available, see label on detector.

**Loop Installation**

- 1 Mark the loop layout on the pavement. Remove sharp inside corners that can damage the loop wire insulation.
- 2 Set the saw to cut to a depth (typically 2" to 2.5") that insures a minimum of 1" from the top of the wire to pavement surface. The saw cut width should be larger than the wire diameter to avoid damage to the wire insulation when placed in the saw slot. Cut the loop and feeder slots. Remove all debris from the saw slot with compressed air. Check that the bottom of the slot is even.
- 3 It is highly recommended that a continuous length of wire be used to form the loop and feeder to the detector. Loop wire is typically 14, 16, 18 or 20 AWG with cross-link polyethylene insulation. Use a wood stick or roller to insert the wire to the bottom of the saw slot (do not use sharp objects). Wrap the wire in the loop saw cut until the desired number of turns is reached. Each turn of wire must lay flat on top of the previous turn.
- 4 The wire must be twisted together a minimum of 6 twists per foot from the end of the saw cut to the detector.
- 5 The wire must be held firmly in the slot with 1" pieces of backer rod every 1 to 2 feet. This prevents the wire from floating when the loop sealant is applied.
- 6 Apply the sealant. The sealant selected should have good adhering properties with similar contraction and expansion characteristics to that of the pavement material.



# Operating Instructions MODEL "B-9" SERIES Single Channel Loop Detectors

**Indicators**

**PWR** Power LED

STATUS	MEANING
Off	No power or low power to detector
On	Normal power to detector

If the supply voltage drops below 75% of the nominal line voltage, the power LED will turn "off." This provides a visual check of low line voltage that can be caused by the start up of a gate motor. The Model B operates with line voltage as low as 85 VAC.

**DET** Detect LED

STATUS	MEANING
Off	No vehicle present over loop
Solid On	Vehicle present over loop
4 Hz Flashing	Vehicle present over loop for less than 2 seconds (2 Sec. Delay)

**FAIL** Failed loop LED

STATUS	MEANING
Off	Loop OK
Solid On	Open loop
1 Hz Flashing, 50% duty cycle	Shorted loop
1 Hz Flashing, 5% duty cycle	Waiting for release of <b>FREQ</b> switch to enter diagnostics mode

**Front Panel Switches (Momentary)**

- **FREQ** Selects one of four loop frequencies: (HIGH / MH / ML / LOW). (Also used to enter loop diagnostics mode).
- **RESET** Resets the detector to the "No Call", i.e. no vehicle detected state.

## Internal DIP Switches

SW#	FEATURE	RANGE	DEFAULT*	
			VALUE	SW Pos
1,2,3	Sensitivity	0 -- 7	3	OFF-ON-ON
4	Output Delay	On / Off	Off	OFF
5	Sensitivity Boost	On / Off	Off	OFF
6	Pulse Mode	Entry / Exit	Entry	OFF
7	Presence Hold Time	TruePres. / Limited Pres.	TruePres.	OFF
8	Output B Mode	Presence / Pulse	Pulse	ON **

\* Default reflects factory settings as shipped.

\*\* B-#(DP) models are shipped with DIP switch 8 set OFF for Dual Presence Configuration.

### Sensitivity (DIP Switches 1,2,3)

Sensitivity is set using internal DIP switches 1, 2, & 3 according to the following table.

SW#	SENSITIVITIES*							
	0	1	2	3	4	5	6	7
1	OFF	OFF	OFF	OFF	ON	ON	ON	ON
2	OFF	OFF	ON	ON	OFF	OFF	ON	ON
3	OFF	ON	OFF	ON	OFF	ON	OFF	ON

\* 0 = Lowest, 3 = Normal, 7 = Highest

### Output Delay (DIP Switch 4)

A two-second delay of Outputs A and B can be activated by setting DIP switch 4 to the ON position. Output delay is the time the detector outputs are delayed after a vehicle first enters the loop detection area. If the 2 second Output Delay feature is activated, the output relays will only be turned on after 2 seconds has passed with a vehicle continuously present in the loop detection area. If a vehicle leaves the loop detection area during the 2 second delay interval, detection is aborted and the next vehicle to enter the loop detection area will initiate a new full 2 second delay interval. By flashing the front panel DET LED at 4 Hz with a 50% duty cycle, the detector indicates that a vehicle is being detected but that the outputs are being delayed.

### Sensitivity Boost (DIP Switch 5)

DIP switch 5 can be turned ON to increase sensitivity only during the detect period, without changing the sensitivity of a vacant loop. When a vehicle enters the loop, the detector then automatically boosts the loop sensitivity but only during the detect condition. As soon as no vehicle is detected, the detector immediately returns to the original sensitivity level. This feature helps prevent dropouts during the passage of high-bed vehicles and is particularly useful in sliding gate situations.

### Pulse Mode (DIP Switch 6)

Output B is the pulse output. The output B relay can be programmed to output a pulse only upon vehicle entry over the loop or only upon vehicle exit from the loop. When DIP switch 6 is OFF, the detector will output an "entry pulse" each time a vehicle enters the loop detection area. When DIP switch 6 is ON, the detector will output an "exit pulse" each time a vehicle leaves the loop detection area. The factory default is OFF, i.e. entry pulse. (DIP switch 6 has no effect on Output A, the presence output).

### Presence Hold Time (DIP Switch 7)

Output A is the presence output. The detector has two presence hold time modes: TruePresence™ and Limited Presence. Both modes output a "Call", i.e. vehicle detected, for as long as a vehicle is present in the loop detection area. TruePresence™ will hold the Call for as long as the vehicle is present and power is not removed or reset applied. Limited Presence will typically hold the Call output for about one to three hours. The TruePresence™ time provides a detection output condition for the entire time the vehicle is present in the loop zone. The TruePresence™ time applies only for normal size automobiles and trucks and for normal size loops (approximately 12 ft<sup>2</sup> — 120 ft<sup>2</sup>). The factory default for DIP switch 7 is OFF, i.e. TruePresence™ mode. By setting DIP switch 7 ON, the detector will operate in Limited Presence mode.

### Output B Mode (DIP Switch 8)

The Output B relay has two modes of operation; either Pulse (ON) or Presence (OFF). When in the pulse mode, the pulse can be either pulse on entry or pulse on exit (see "Pulse Mode – DIP switch 6"). When in the presence mode, the presence hold time is the same as Output A (see "Presence Hold Time - DIP switch 7).

## Frequency

Loop frequency is controlled by the **FREQ** switch on the front panel. Sometimes when loops are in close proximity, it may be necessary to select different frequencies for each loop to avoid loop interference -- commonly known as crosstalk. Four frequencies labeled "High" to "Low" are available. Each time the **FREQ** button is momentarily pushed, the next higher frequency is selected. The next frequency after High is Low. **Note:** Immediately after each change of frequency, the detector is automatically reset; therefore there is no need to push the **RESET** button.

## Call Memory

When power is removed for 2 seconds or less, the detector automatically "remembers" if a vehicle was present and a Call was in effect. When power is restored, the detector will continue to output a Call until the vehicle leaves the loop. (Power loss or dips of 2 seconds or less will not bring a gate arm down onto cars as they wait at the gate).

## Failed Loop Diagnostics

The **FAIL** LED indicates whether or not the loop is currently within tolerance. If out of tolerance, the LED indicates whether the loop circuit is shorted or open. If and when the loop returns to within tolerance, the **FAIL** LED will resume the OFF condition indicating "Loop OK".

Additionally, the detector automatically stores the last loop failure type in non-volatile memory. To determine the last loop failure, press the **FREQ** key for three seconds or more. When the **FAIL** LED begins flashing at 1 Hz with 5% duty cycle, release the **FREQ** key. The detector will then display the last loop failure type detected (if any). This indication will be displayed **one time** for about fifteen seconds unless terminated by pressing the **RESET** or **FREQ** key. The non-volatile memory used to store the last loop failure type is automatically cleared each time it is interrogated.

## Fail Mode

Two versions of the Model B detector are manufactured: Fail Safe, Model B-#, and Fail Secure, Model B-#(S). In the Fail Safe version, when the loop fails in any manner or power is removed, the Output A relay assumes the state indicating Call. In the Fail Secure version, when the loop fails in any manner or power is removed, the Output A relay assumes the state indicating No Call.

N.O. Contact State	FAIL SAFE OPERATION		FAIL SECURE OPERATION	
	Power Failure	Loop Failure	Power Failure	Loop Failure
Relay A	Call	Call	No Call	No Call
Relay B	No Call	No Call	No Call	No Call

**Note 1:** The Output B pulse relay always operates in Fail Secure mode, i.e. no Call is indicated during failure conditions.

## Pin Connections:

PIN	FUNCTION
1	POWER, HOT or (+)*
2	POWER, NEUTRAL or (-)*
3	LOOP
4	LOOP
5	OUTPUT A, NORMALLY CLOSED
6	OUTPUT A, COMMON
7	OUTPUT A, NORMALLY OPEN
8	OUTPUT B, COMMON
9	OUTPUT B, NORMALLY OPEN
10	OUTPUT B, NORMALLY CLOSED
11	NO CONNECTION