

# Reno A & E Model B Series

Single Channel Inductive Loop Vehicle Detectors  
With Built-In Diagnostics -Utilizing Non-Volatile Memory



## Features & Benefits

- \*Advanced Diagnostics: Low Voltage, Open Loop, and Shorted Loop Conditions.
- \*Non-Volatile Memory insures loop diagnostics are not lost when power is removed.
- \*Automatic Reset Internal Fuse (24 VAC versions only), provides fuse & circuit protection.
- \*Detect Memory helps prevent detection drops during short power interruptions.
- \*Sensitivity Boost, for gate operation where high profile vehicles might be encountered.
- \*2-Second CALL Delay.
- \*Dual Programmable relays offer selectable modes of operation:
  - \*Output A: True Presence™ (Infinite) or Limited Presence.
  - \*Output B: Presence or Pulse on Entry or Pulse on Exit.
- \*FAIL-SAFE and FAIL-SECURE versions available.
- \*4 loop frequencies selectable from the front panel.
- \*8 levels of sensitivity.
- \*Super bright LEDs provide separate power, DETECT, & loop FAIL indications.
- \*11 pin rear "Amphenol" and 10 pin rear "MS" connector versions available.
- \*Configurations available: 24 VAC, 120 VAC, 240 VAC, 12 VDC, & 24 VDC.

## Specifications

**Loop Frequency:** Four frequencies (normally in the range of 20 to 100 kHz) are switch selectable from the front panel. Four super bright LEDs indicate frequency setting.

**Reset:** The detector can be manually reset by a front panel push button switch or interrupting power.

**Sensitivity:** Vehicle detection results when a negative change in loop inductance ( $-\Delta L/L$ ) exceeds the sensitivity setting. Eight detection sensitivity levels are internally dip-switch selectable.

**Sensitivity Boost:** An internal switch setting may be turned on to increase sensitivity during the DETECT period. 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 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 particularly useful in sliding gate situations.

**Relay "A" Modes:** Two presence hold times are selectable for Relay A with an internal switch, "True Presence™ " and "Limited Presence". Both modes output a call when a vehicle is present in the loop. True Presence™ 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 1-3 hours. The True Presence™ time applies only for normal size automobiles and trucks and for normal size loops (approx. 12 sq. ft. to 120 sq. ft.).

<u>Sensitivity</u>	<u><math>-\Delta L/L</math></u>
0	1.28%
1	0.64%
2	0.32%
3	0.16%
4	0.08%
5	0.04%
6	0.02%
7	0.01%

**Relay "B" Modes:** Two modes of operation are selectable for Relay B with an internal switch, Presence or Pulse. When in the presence mode, the presence hold time is the same as Output A. When in the pulse mode, the 250-millisecond pulse can be selected as either *pulse on entry* (when a vehicle enters the loop) or *pulse on exit* (when a vehicle exits the loop). Relay B is always a FAIL SECURE Output.

**CALL Delay:** A 2-second delay of Outputs A & B can be activated by an internal switch. Output delay is the time the detector outputs are delayed after a vehicle first enters the loop detection area and is indicated by the front panel DETECT LED flashing at 4 Hz with a 50% duty cycle. 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 entering the loop detection area will initiate a new full 2-second delay interval.

**Output CALL Memory:** When power is removed for 2 seconds or less, the detector automatically "remembers" if a vehicle was present over the loop. 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 drop the CALL).

**Power Status Indicator:** A green super-high-intensity light emitting diode (LED) indicates power status during normal detector operation. When the green (PWR) LED is on, the power to the detector is normal. When power drops approximately 20% from nominal, the green LED turns off and the detector remains operational. When power drops approximately 25% from nominal, the green LED is off and the "line" voltage is not sufficient to operate the detector.

**Detect Status Indicator:** The red DETECT LED is steady on while a vehicle is being detected. The DETECT LED will flash at a 4 Hz rate with a 50% duty cycle while timing out the 2-Second CALL Delay.

**Loop FAIL Monitor Indicator:** If the total inductance of the detector input network goes out of the range specified for the detector or suddenly changes more than +/-32% the detector will enter FAIL mode. The red FAIL LED will either begin flashing with a 50% duty cycle once per second for a shorted loop condition or will be on continuously for an open loop condition. These indicator conditions will continue until the inductance returns to its previous value at which time the detector output will automatically resume normal operation and the red FAIL LED will turn off. *See Non-Volatile "Loop Fail" Memory Status.* [The detector input network, consists of the loop or loops plus the feeder cable (lead-in or home run) up to the connector on the detector].

**Non-Volatile "Loop FAIL" Memory Status:** To review the detectors last "loop FAIL" condition, press and hold the frequency button until the FAIL light begins to flash (3 seconds) - then release. Note the detector remains in full operation during interrogation. The red FAIL LED will either be off (no loop problems occurred), flashing (shorted loop condition occurred) or on (open loop condition occurred). After 15 seconds the non-volatile memory is cleared and reset. (Note, power loss and/or pressing the reset button does not clear stored memory).

**FAIL SAFE Operation:** **When** the loop fails or power is removed, continuity exists between Common & N.O. for Relay A. Continuity exists between Common & N.C. for Relay B.

**FAIL SECURE Operation:** When the loop fails or power is removed, continuity exists between Common & N.C. for both relays A & B.

**Self-Tuning:** Automatically tunes to loop within 2 seconds after application of power or reset. 30 seconds of operation is required before full sensitivity and presence time is reached following application of power or a reset.

**Environmental Tracking:** Fully self-compensating for environmental changes and loop drift over the full temperature range and the entire loop inductance range.

**Loop Inductance Range:** 20 to 1000  $\mu$ H with Q factor of 5 or greater.

**Loop Input:** Transformer isolated. The minimum capacitance added by the detector is 0.068  $\mu$ F.

**Grounded Loop Operation:** The loop isolation transformer allows operation with poor quality loops (which may include a single point short, or leakage, to ground).

**Lightning Protection:** The detector can tolerate, without damage, a 10 F capacitor charged to 1,000 Volts being discharged directly into the loop input terminals, or a 10 microfarad capacitor charged to 2,000 Volts being charged between either loop terminal and earth ground.

**Internal Circuitry Isolation:** All internal electronic circuitry is isolated from all external circuitry. Power is isolated by means of the power transformer. The loop is isolated by means of the loop isolation transformer. The outputs are isolated by means of the output relays.

**Automatic Reset Internal Fuse:** When 120VAC is applied to 24VAC models, the automatic internal fuse will open. The fuse will automatically reset when power is removed for 3 seconds. Source voltage should be verified before reinstalling.

**Relay Rating(s):** The relay contacts are rated for 6 Amp max, 150 VDC max, 300 VAC max and 180 Watts max switched power.

**Ruggedized Construction:** The 11 pin "Amphenol" type enclosures are high temperature rated lexan plastic. The 10 pin "MS" type enclosures are aluminum with a durable fused polyester coating. Printed circuit boards are double sided 2 oz copper with plated through-holes.

**Operating Temperature:** -40° F to + 180° F. Meets or exceeds NEMA specifications.

**Power(s):**

- \*18 to 32 VAC, 50/60 Hz., 4.0 Watts max.
- \*89 to 135 VAC, 50/60 Hz., 4.0 Watts max.
- \*176 to 288 VAC., 50/60 Hz., 4.0 Watts max.
- \*10 to 16 VDC, 80 mA max.
- \*20 to 34 VDC, 50 mA max.

**Fuse(s):**

- \*24 VAC power: 120 mA, Polymeric
- \*120 VAC power: 3/8 Amp, Slo-Blo.
- \*240 VAC power: 3/8 Amp, Slo-Blo.
- \*12 VDC power: Current limited.
- \*24 VDC power: Current limited.

<b>Size(s):</b>	<b>11 Pin "Amphenol" Connector:</b> 1.75 inches (4.45 cm.) Wide x 3.00 inches (7.62 cm.) High x 5.00 inches (12.70 cm.) Deep, including rear connector
	<b>10 Pin "MS" Connector Type:</b> 1.60 inches (4.06 cm.) Wide x 2.90 inches (7.37 cm.) High x 5.66 inches (14.38cm.) Deep, including rear connector.

<b>Weight(s):</b>	<b>11 Pin "Amphenol" Connector Type:</b> Approx. 8.1 oz. (229.64 gm.).
	<b>10 Pin "MS" Connector Type:</b> Approx. 12.8 oz. (362.88 gm.).

<b>Connector(s):</b>	11 Pin male "Amphenol" rear mount connector (86CP11)
	10 Pin male "MS" rear mount connector (MS3102A-18-1P)

**Factory Default Settings:**

- \*Sensitivity Level: Level 3
- \*Relay B = Pulse on Entry
- \*Sensitivity Boost: OFF
- \*2-Second CALL Delay: OFF
- \*Output Configurations: Relay A = True Presence™ (Infinite)

## Pin Assignments

11 Pin "Amphenol" Connector		10 Pin "MS" Connector	
#	Function	#	Function
1	Hot or (+)	A	Power, Neutral or (-)
2	Neutral or (-)	B	Output A, Normally Open
3	Output B, Normally Open	C	Power, Hot or (+)
4	No Connection	D	Loop
5	Output A, Common	E	Loop
6	Output A, Normally Open	F	Output A, Common
7	Loop	G	Output A, Normally Closed
8	Loop	H	Chassis Ground
9	Output B, Common	I	Output B, Common
10	Output A, Normally Closed	J	Output B, Normally Open
11	Output B, Normally Closed		

**Note:** \* Relay contacts are shown with power applied, loop(s) connected, and no vehicles present.

## Models & Configurations

Model	Connector		Voltage	Operation	
	10 pin	11 pin		FAIL SAFE	FAIL SECURE
B-1	x		120 VAC	x	
B-1-S	x		120 VAC		x
B-22	x		24 VAC	x	
B-22-S	x		24 VAC		x
B-35	x		240 VAC	x	
B-35-S	x		240 VAC		x
B-3		x	120 VAC	x	
B-3-S		x	120 VAC		x
B-7		x	24 VAC	x	
B-7-S		x	24 VAC		x
B-8		x	240 VAC	x	
B-8-S		x	240 VAC		x
B-23		x	12 VDC	x	
B-23-S		x	12 VDC		x
B-24		x	24 VDC	x	
B-24-S		x	24 VDC		x

**Notes:**

- \* CALL Memory is always on. There is no switch setting for this feature.
- \* Please specify correct model number for **FAIL-SAFE** or **FAIL-SECURE** when ordering.
- \*\* Specifications are subject to change to reflect improvements and upgrades.