

# Reno A & E Model BX-LP Series

Low Power / Low Current Consumption Single Channel Inductive Loop Vehicle Detectors



## Features & Benefits

- \***Extremely "Low Current Consumption"**. When LEDs are deactivated and utilizing factory set positions, the Model BX-LP (relay version) draws 30.0 milliamps max. and the Model BX-LP-SS (solid-state version) draws 4.0 milliamps max. See the "Power" specification below.
- \*Excellent detector for all solar and battery-sourced installations.
- \*All switches are accessible from the front panel.
- \*Loop Diagnostics: Front panel "Fail" LED indicates Open/Shorted Loop condition. A second distinct flash rate indicates a loop failure has occurred and was corrected.
- \*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.
- \*Selectable FAIL-SAFE or FAIL-SECURE operation when a loop fault occurs.
- \*4 loop frequencies selectable from the front panel.
- \*8 levels of sensitivity selectable from front panel rotary switch.
- \*Super bright LEDs provide separate DETECT, and loop FAIL indications. The "DET" LED automatically turns off after 3 minutes of power on or after a reset to conserve power.
- \*11 pin rear "Amphenol" connector.
- \*Configurations available: 12 VDC (24 VDC available by special order).

## Specifications

**Loop Frequency:** Four frequencies (normally in the range of 20 to 100 kHz) are dip switch selectable from the front panel.

**Reset:** Changing any dip switch position (except SW 1 & SW 2: frequency selection) will reset the detector. After changing the Frequency selection switches, the detector will require a RESET. Reset will clear the loop fault memory.

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

**Sensitivity Boost:** An external dip 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

<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%

with an external dipswitch, "TruePresence™ " and "Limited Presence". Both modes output a CALL when a vehicle is present in the loop. 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 1-3 hours. The TruePresence® time applies only for normal size automobiles and trucks and for normal size loops (approx. 12 sq. ft. to 120 sq. ft.).

**Relay "B" Modes:** Two modes of operation are selectable for Relay B with an external dip 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 a FAIL SECURE output in the presence and pulse modes.

**CALL Delay:** A 2-second delay of Outputs A & B can be activated by an external dip 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. The flashing will only occur during the 3 minute activation of the "DET" LED.

**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. NOTE: The "DET" LED is only operational during the first 3 minutes of power or after a reset. After the first 3 minutes of operation, the LED automatically turns off.

**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 +/-25% the detector will enter FAIL mode. The red FAIL LED will either begin flashing with a 50% duty cycle once per second for an open or shorted loop condition. This indicator condition 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 flash at a distinctive rate (one flash every 5 seconds) to indicate an intermittent loop fault has occurred and corrected. [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].

**FAIL SAFE / FAIL SECURE Operation:** When in the fail-safe or ON position, Output A will output a signal when a loop fault condition exists. If the loop fault self-corrects, Output A will assume the "No fault" output state. When in the fail-secure or OFF position, the detector will not output a signal during a loop failure condition. Note: Relay Output A & B are fail secure on loss of power.

**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. Minimum capacitance added by the detector is 0.068°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°F capacitor charged to 2,000 Volts being charged between either loop terminal and earth ground.

**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 enclosure is high temperature rated Lexan plastic. 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.

<u>Model BX-LP (Factory Set)</u>	<u>Model BX-LP-SS (Factory Set)</u>
*4.0 milliamps max with no vehicle in the loop zone.	
*35.0 milliamps max with vehicle in the loop zone and during the first 3 minutes of power on or after a reset (LEDs are activated). Add 25.0 milliamps for dual presence operation.	*12.0 milliamps max with vehicle in the loop zone and during the first 3 minutes of power on or after a reset (LEDs are activated).
*30.0 milliamps max with vehicle in the loop zone and after first 3 minutes of power on (LEDs are de-activated). Add 25.0 milliamps for dual presence operation.	*4.0 milliamps max with vehicle in the loop zone and after first 3 minutes of power on (LEDs are de-activated).

**Power(s):** 10 to 14 VDC

**Fuse(s):** 12 VDC power: Current limited.

**Size:** 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.

**Weight:** Approx. 8.1 oz. (229.64 gm.).

**Connector:** Rear mount 11 Pin male "Amphenol" connector (86CP11).

**Factory Default Settings:**

Sensitivity Level: Level 3

Output Configurations: Relay A = True Presence™ (Infinite)

Relay B = Pulse on Entry

Sensitivity Boost: OFF

2-Second CALL Delay: OFF

<b>Pin Assignments</b>			
<b>BX-LP</b>		<b>BX-LP-SS</b>	
#	Function	#	Function
1	Power, 12 VDC (+)	1	Power, 12 VDC (+)
2	Power, 12 VDC (-)	2	Power, 12 VDC (-)
3	Output B, Normally Open	3	Output B, Drain
4	No Connection	4	No Connection
5	Output A, Common	5	Output A, Source
6	Output A, Normally Open	6	Output A, Drain
7	Loop	7	Loop
8	Loop	8	Loop
9	Output B, Common	9	Output B, Source
10	Output A, Normally Closed	10	No Connection
11	Output B, Normally Closed	11	No Connection

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

\*\* Specifications are subject to change to reflect improvements and upgrades