



## Specifications:

*This is a basic Performance Specification and is not intended to be used as Operating Instructions.*

**Loop Frequency:** There are 4 frequencies (normally in the range of 20 to 100 kHz) that are DIP switch selectable from the front panel.

**Reset:** Changing any DIP switch position (except Sw 1 & Sw 2, frequency selection) or the rotary sensitivity switch resets the detector. After changing the frequency selection switches, the detector will require a RESET. Reset clears the loop fault memory.

**Sensitivity:** Vehicle detection results when a negative change in loop inductance ( $-\Delta L/L$ ) exceeds the sensitivity setting. The 8 detection sensitivity levels are front panel rotary switch selectable. (See Tables, "Sensitivity").

**Sensitivity-Boost:** A front panel DIP switch setting may be turned ON to increase sensitivity ONLY 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.

**Output Relay "A" Modes:** Two presence hold times are selectable for Output Relay A with a front panel DIP switch, "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 one to three hours. The TruePresence™ time applies only for normal size automobiles and trucks and for normal size loops (approximately 12 sq ft to 120 sq ft).

**Output Relay "B" Modes:** Two modes of operation are selectable for Output Relay B with a front panel 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, a 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). Output Relay B is a Fail-Secure output in the presence and pulse modes.

**Call Delay:** A two second delay of Outputs A & B can be activated by a front panel 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 "DET" 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 "DET" LED is steady ON while a vehicle is being detected. The "DET" LED will flash at a 4 Hz rate with a 50% duty cycle while timing 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  $\pm 25\%$  the detector will enter the fail mode. The red "FAIL" LED will 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, but the loop is currently operating normally. The flash rate

will continue until another loop fault occurs, the detector is RESET, or the detector loses power. [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 microhenries with Q factor of 5 or greater.

**Loop Feeder Length:** Up to 2500 feet (762 m) maximum with proper feeder cable and appropriate loops.

**Loop Input:** Transformer isolated. The minimum capacitance added by the detector is 0.068 microfarads.

**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 microfarad 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 discharged between either loop terminal and earth ground.

**Relay Rating(s):** The relay contacts are rated for 10-amp max, 150-VDC max, 300-VAC max and 500-VA max switched power.

**Solid State Rating(s):** Open drain FET. Source to Common. Rated for maximum continuous current of 2.5 amps. Rated for up to 25 VDC.

**Ruggedized Construction:** The enclosure is high temperature rated lexan plastic. Printed circuit boards are 0.062 in FR4 material with 2 oz copper each side.

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

**Power:** 10 to 14 VDC.

Model BX-LP (Factory Set):

- 4.0 milliamps max with no vehicle in 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.
- 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.

Model BX-LP-SS (Factory Set):

- 4.0 milliamps max with no vehicle in loop zone.
- 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).
- 4 milliamps max with vehicle in the loop zone and after first 3 minutes of power on (LEDs are de-activated).

**Fuse:** 12 VDC power: Current limited.

**Size:** 1.75 in (4.45 cm) Wide x 3.00 in (7.62 cm) High x 5.00 in (12.70 cm) Deep, including rear connector.

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

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

## Tables:

### Sensitivity:

Sens	$-\Delta L/L$	Sens	$-\Delta L/L$
0	1.28%	4	0.08%
1	0.64%	5	0.04%
2	0.32%	6	0.02%
3	0.16%	7	0.01%

### Pin Assignments:

#### Model BX-LP

Pin	Function
1	Power, 12 VDC (+)
2	Power, 12 VDC (-)
3	Output B, Normally Open (N.O.)
4	No Connection
5	Output A, Common
6	Output A, Normally Open (N.O.)
7	Loop
8	Loop
9	Output B, Common
10	Output A, Normally Closed (N.C.)
11	Output B, Normally Closed (N.C.)

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

#### Model BX-LP-SS

Pin	Function
1	Power, 12 VDC (+)
2	Power, 12 VDC (-)
3	Output B, Drain
4	No Connection
5	Output A, Source
6	Output A, Drain
7	Loop
8	Loop
9	Output B, Source
10	No Connection
11	No Connection

### Factory Default Settings:

Sensitivity Level: Level 3  
 Output Configurations: Relay A = TruePres. (Infinite)  
   Relay B = Pulse on Entry  
 Sensitivity Boost: OFF  
 2-Second Call Delay: OFF

### Ordering Instructions:

Relay Version: Model BX-LP  
 Solid State Version: Model BX-LP-SS

### Special Order instructions for 24 VDC type:

Relay Version: Model BX-LP-24  
 Solid State Version: Model BX-LP-24-SS



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