

AX2 Series

Two Channel Detector

The Model AX2 is a full featured, dual channel, dual output (one per channel) vehicle detector that incorporates the reliable vehicle detection technology found in all of Reno A & E's vehicle detectors. All detector functions and settings are easy to configure by using two sets of six external DIP switches.



3" High x 1.75" Wide x 4.3" Deep

- Models available that operate on 12 VDC / 24 VDC / 24 VAC, 120 VAC, or 240 VAC input power.

- Fail-Safe or Fail-Secure versions available.

- Single Relay output per channel:
 - True Presence™.
 - Pulse-on-Entry.

- Four Loop Frequencies and Four levels of sensitivity.

- Sensitivity Boost for applications where high-bed vehicles might be encountered.

- Power Down Memory feature enables the detector to automatically track the status of the loop during power interruptions of any duration.

- Fail LED indicates current loop failures or loop failures that have occurred.

- Single 11-pin connector or Dual 11-pin connector models available.

Ordering Information:

Model AX2 - X - XX - X - (XX)

(NC) OR (NO): NC= Normally Closed Relay Contacts, NO = Normally Open Relay Contacts
 Blank = Fail-Safe, S = Fail-Secure
 1C or 2C: 1C = Single Connector, 2C = Dual Connector

3, 4, or 8: 3 = 120 VAC Input Power, 4 = 12 VDC, 24 VDC, or 24 VAC Input Power, or 8 = 240 VAC Input Power

**2C (Dual Connector) models do not have the N.O. or N.C. contact designation

AX2 Series Specification

This is a Performance Specification. It is not intended to be used as Operating Instructions.

Loop Frequency: Four (4) operating frequencies (normally in the range of 20 to 100 kilohertz) are selectable for each channel by means of four front panel mounted DIP switches (two per channel).

Sensitivity: Four (4) detection sensitivity levels are selectable for each channel by means of four front panel mounted DIP switches (two per channel). Vehicle detection results from a sufficient negative change in loop inductance (-ΔL/L). (See SENSITIVITY, -ΔL/L table.)

Sensitivity Boost: Each channel has a front panel mounted DIP switch that may be turned on to increase sensitivity during the Detect State. When a vehicle enters the loop detection zone, the detector channel sensitivity is automatically boosted to a higher level than the vacant loop setting. The boosted sensitivity level is maintained throughout the Detect State. When the vehicle leaves the loop detection zone, the channel sensitivity immediately returns to the vacant loop setting. This feature is particularly useful in preventing dropouts during the passage of high bed vehicles.

Presence / Pulse Output Modes: Each detector channel's output has two modes of operation that are selectable by means of two front panel mounted DIP switches (one per channel); True Presence™ and Pulse-on-Entry. True Presence™ will hold the channel's output in the Detect state as long as the vehicle is present in the loop detection zone and power is not removed or reset applied. True Presence™ time applies only for normal size automobiles and trucks and for normal size loops (approximately 12 to 120 sq. ft.). When set to operate in Pulse-on-Entry mode, a 250 millisecond pulse output will occur when the vehicle enters the loop detection zone.

Fail-Safe / Fail-Secure Operation: When the detector is configured to operate in Fail-Safe mode, the output will assume a detect output state (relay Normally Open contacts closed, relay Normally Closed contacts open) during a power loss or loop fault condition. **To operate in Fail-Secure mode swap pin 5 and 10, and output will not respond to power losses or loop failures, (relay Normally Open contacts open, relay Normally Closed contacts closed).**

Call Delay: A two second delay of the detector output can be activated by setting an internal DIP switch. Output delay is the time the detector output is delayed after a vehicle first enters the loop detection zone. If the Delay feature is activated, the output will only be turned on after the two second delay time has passed with a vehicle continuously present in the loop detection zone. If a vehicle leaves the loop detection zone during the delay interval, detection is aborted and the next vehicle to enter the loop detection zone will initiate a new full two second delay interval. By flashing the Detect LED at a four Hz rate with a 50% duty cycle, the detector indicates that a vehicle is being detected but that the output is being delayed.

Power Indicator: The green Power LED is Off when the detector has no power supplied or when the power level is below 75% of its nominal value. The Power LED is On when the detector is being supplied with a suitable level of power.

Detect / Fail Indicator: Each channel has a red Detect / Fail LED that is used to convey information about the channel's output state and/or loop failure conditions. The Detect / Fail LED is Off when the channel's loop detection zone is vacant. The Detect / Fail LED is On when a vehicle is being detected. The Detect / Fail LED flashing at a one Hz rate with a 50% duty cycle indicates that a Shorted Loop fail condition exists. The Detect / Fail LED flashing at a 10 Hz rate with a 50% duty cycle indicates that an Open Loop fail condition exists. The Detect / Fail LED flashing at a rate of three flashes per second indicates that a loop failure condition has occurred and has been corrected. This flash rate will continue until another loop fault occurs, the detector is reset, or the detector loses power. Note: If a vehicle is detected, the Detect / Fail LED will turn ON even if a prior loop failure condition exists.

Detector Reset: Changing the position of either channel's DIP Switches (except the Frequency DIP switches) will reset that detector channel. The detector can be reset by pressing the front panel mounted push-button labeled RESET. After changing either channel's Frequency selection switches (DIP switches 1 & 2), the detector channel must be reset.

Detect Memory: When power is removed, the detector automatically remembers the status of each channel's loop. During the loss of power, vehicles may enter or leave the loop detection zones. When power is restored, the detector will correctly determine the current loop status and output a Call if a vehicle is in the loop detection zone. If the loop detection zone is vacant, a Call will not be output. (A power loss power dip of any duration will not bring a gate arm down onto cars as they wait at the gate). **IMPORTANT:** After installing and applying power to the Model AX2 detector, momentarily push the RESET button to clear the Power Down Memory. This initializes the detector to the loops that are connected and clears the memory of any previous loop information.

Self Tuning: The detector automatically tunes and is operational within two seconds after application of power or after being reset. Full sensitivity and hold time requires 30 seconds of operation.

Environmental & Tracking: The detector is 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 2000 microhenries with a 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 microfarad.

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

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.

Electrical Isolation: The loop is isolated by means of the loop isolation transformer. The outputs are isolated by means of the output relays.

Relay Outputs: Rated for maximum continuous current of 6.0 amps, 300 VAC maximum, 150 VDC maximum, and 180 Watts maximum switched power.

Power: 120 VAC version (AX2-3): 89 to 135 VAC, 4 Watts maximum. 240 VAC version (AX2-8): 180 to 270 VAC, 4 Watts maximum. 12 VDC / 24 VDC / 24 VAC version (AX2-4): 10 to 16 VDC, 80 milliamps maximum / 20 to 34 VDC, 50 milliamps maximum / 18 to 32 VAC, 4 Watts maximum.

Sensitivity & -ΔL/L	
Sensitivity Setting	-ΔL/L
0	0.32%
1*	0.16%*
2	0.08%
3	0.02%

*Denotes factory default
Note: Changing a sensitivity switch will reset the detector.

Pin Assignments: (Single Connector Models)		
PIN	Function (NO Models)	Function (NC Models)
1	AC Line / DC +	AC Line / DC +
2	AC Neutral / DC Common	AC Neutral / DC Common
3	Channel 2 Relay, N.O.	Channel 2 Relay, N.C.
4	No Connection	No Connection
5	Channel 1 Relay, Common	Channel 1 Relay, Common
6	Channel 1 Relay, N.O.	Channel 1 Relay, N.C.
7	Channel 1 Loop	Channel 1 Loop
8	Channel 1 Loop	Channel 1 Loop
9	Channel 2 Relay, Common	Channel 2 Relay, Common
10	Channel 2 Loop	Channel 2 Loop
11	Channel 2 Loop	Channel 2 Loop

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

Pin Assignments: (Dual Connectors Models)		
PIN	Function (NO Models)	Function (NC Models)
1	AC Line / DC +	No Connection
2	AC Neutral / DC Common	No Connection
3	No Connection	No Connection
4	No Connection	No Connection
5	Channel 1 Relay, Common	Channel 2 Relay, Common
6	Channel 1 Relay, N.O.	Channel 2 Relay, N.O.
7	Channel 1 Loop	Channel 2 Loop
8	Channel 1 Loop	Channel 2 Loop
9	No Connection	No Connection
10	Channel 1 Relay, N.C.	Channel 2 Relay, N.C.
11	No Connection	No Connection

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

Factory Default Settings: Front Panel Switches			
Switch	ON	OFF	Default
1	Four (4) Frequency Selections		OFF
2			OFF
3	Output TruePresence™	Output Pulse-on-entry	OFF
4	Sensitivity Boost	No Boost	OFF
5			ON
6	Four (4) Sensitivity Selections		OFF

Ruggedized Construction: The detector enclosure is made from a high temperature rated plastic. Printed circuit boards are 0.062 inch thick FR4 material with 2 oz. copper on both sides and plated through holes. Circuit board and components are conformal coated with polyurethane.

Operating Temperature: -30° F to +180° F (-34° C to +82° C).

Connector(s): One or two rear mounted 11 Pin Amphenol connector(s) (See PIN ASSIGNMENTS tables.)

Size: 3.00 inches (762 cm) high x 1.75 inches (4.45 cm) wide x 4.30 inches (10.92 cm) deep (excluding connector).
 Weight: 8.8 oz (249.5 gm).