

MODEL "AX2" SERIES

Dual Channel - Inductive Loop Vehicle Detectors



Model "AX2DL" SERIES

Dual Channel - Inductive Loop Directional Logic Detectors

Engineering Excellence!

**CONNECTOR OPTION:
Choose between One or Two
11-Pin "Amphenol" Type**



FEATURES & BENEFITS:

- *Two Detectors in one small box.* Eliminates crosstalk between loops connected to the same AX2 detector.
- All switches are accessible from the front panel.
- "PWR" LED provides visual check of low line voltage or no power at all.
- Automatic Reset Internal Fuse (24 VAC version), provides fuse & circuit protection when incorrect voltage is applied.

FEATURES & BENEFITS (Cont.):

- **NEW FEATURE! Power Down Memory:** When power is removed (no matter what length of time) the detector automatically determines the correct status of the loop when power is restored. Knows if vehicle enters or exits loop when power is down.
- **Directional Logic (AX2DL Series Only)** also known as AB Logic or BA Logic uses the Ch. 1 (A) & Ch. 2 (B) loops to determine the direction the vehicle is traveling.
- **Loop Diagnostics:** Front panel "Fail" LED indicates "real-time" Open Loop and Shorted Loop conditions. A third distinct flash rate indicates a loop failure has occurred.
- **Sensitivity-Boost,** for gate operation where high profile vehicles might be encountered.
- **Single programmable relay (per channel)** offers two selectable modes of operation:
 - True Presence (Infinite)
 - Pulse on Entry
- 4 loop frequencies per channel are selectable from the front panel.
- 4 sensitivity levels per channel are selectable from the front panel.
- Super bright LEDs provide separate Power, Detect & Loop Fail indications.
- Fail-Safe and Fail-Secure versions available.
- Single 11-pin rear "Amphenol" connector or Dual 11-pin rear "Amphenol" connectors are available.
- Configurations available: 24 VAC, 120 VAC, 240 VAC, 12 VDC, & 24 VDC.

Manufactured By:

Distributed By:

Reno A & E

4655 Aircenter Circle
Reno, Nevada 89502 USA
Tel: (775) 826-2020
Fax: (775) 826-9191
E-mail: sales@renoae.com
Internet: www.renoae.com

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 for each channel from the front panel. NOTE: Loops connected to channels 1 & 2 cannot crosstalk (loops are sequentially scanned). When loops are in close proximity to each other and connected to different detector units, it may be necessary to select different frequencies for each loop to avoid loop interference.

Reset: Reset button resets both channels. Changing any DIP switch position (except Pos Sw 1 & Pos Sw 2, frequency selection) resets the channel. After changing the frequency selection switches, the channel will require a RESET. Reset clears the loop fault memory.

Sensitivity: Vehicle detection results when a negative change in loop inductance (-Δ/L) exceeds the sensitivity setting. The 4 detection sensitivity levels for each channel are front panel DIP switch selectable. (See Tables, "Sensitivity").

Sensitivity-Boost: Each channel has an external 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(s): The output is selectable for each channel for either TruePresence™ (Infinite) or Pulse on Entry (when a vehicle enters the loop). The TruePresence™ will hold the Call for as long as the vehicle is present and reset is not applied. The TruePresence™ time applies only for normal size automobiles and trucks and for normal size loops (approximately 12 sq ft to 120 sq ft). The pulse (width) output is 250 milliseconds.

Directional Logic (AX2DL Series): Directional Logic, also known as AB Logic or BA Logic uses the Ch. 1 & Ch. 2 loops to determine the direction the vehicle is traveling. The loops must be spaced such that a vehicle can span both loops. The expected installation is two loops, one after the other in the same lane, spaced anywhere from overlapping to 6 feet apart.

AB Logic is when a vehicle travels from Ch. 1 loop (A) and enters the Ch. 2 loop (B) (vehicle is now over both loops), activating the relay and LED on Ch 2 to indicate the AB direction. **BA Logic** is when a vehicle travels from Ch. 2 loop (B) and enters the CH 1 loop (A), activating the relay and LED on Ch 1 to indicate the BA direction.

Note: Contact Reno A & E regarding loop configurations and spacings for specific applications.

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 approx. 20% from nominal, the green LED turns OFF and the detector remains operational. When power drops approx. 25% from nominal, the green LED is OFF and the "line" voltage is not sufficient to operate the detector.

Detect Status Indicator: A separate red "DET" LED for each channel is steady ON while a vehicle is being detected.

Loop Fail Monitor Indicator: If the total inductance on either channel 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 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 flash at a distinctive rate (a burst of three flashes once per second) to indicate an intermittent loop fault has occurred to either Ch.1 or Ch. 2 and corrected. 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].

Power Down Memory: When power is removed, the detector automatically "remembers" the operating parameters of the loop for each channel. During the loss of power, vehicles may enter or leave the loop area. When power is restored, the detector will determine if any vehicle is present in the loop and output a call if appropriate. IMPORTANT: After installing and applying power, 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.

Fail-Safe Operation: When either Ch. 1 or Ch. 2 loop fails or power is removed, continuity exists between that channels Common & N.O.

Fail-Secure Operation: When either Ch. 1 or Ch. 2 loop fails or power is removed, continuity exists between that channels Common & N.C.

Self Tuning: Automatically tunes to loop(s) 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: Each channel 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 charged between either loop terminal and earth ground.

Internal Circuitry Isolation: All internal electronic circuitry is isolated from all external circuitry. AC 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 120 VAC is applied to 24 VAC 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 2 Amps max, 60 VDC max, 120 VAC max and 30 Watts max switched power.

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.

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 milliamps max.
 20 to 34 VDC, 50 milliamps max.

Fuse(s):
 24 VAC power: 120 milliamp., 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.

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: Single or Dual rear mount 11 Pin male "Amphenol" connector (86CP11).

Tables:

Sensitivity:

Sens	-Δ/L	Sens	-Δ/L
0	0.32%	2	0.08%
1	0.16%	3	0.02%

Pin Assignments - Single 11 Pin Type Normally Closed (NC) Outputs

Pin	Function
1	Power, Hot or (+)
2	Power, Neutral or (-)
3	Relay Output Ch. 2, Normally Closed (N.C.)
4	No Connection
5	Relay Output Ch 1, Common
6	Relay Output Ch 1, Normally Closed (N.C.)
7	Ch 1. Loop
8	Ch 1. Loop
9	Relay Output Ch 2, Common
10	Ch 2. Loop
11	Ch 2. Loop

Pin Assignments - Single 11 Pin Type Normally Open (NO) Outputs

Pin	Function
1	Power, Hot or (+)
2	Power, Neutral or (-)
3	Relay Output Ch. 2, Normally Open (N.O.)
4	No Connection
5	Relay Output Ch 1, Common
6	Relay Output Ch 1, Normally Open (N.O.)
7	Ch 1. Loop
8	Ch 1. Loop
9	Relay Output Ch 2, Common
10	Ch 2. Loop
11	Ch 2. Loop

Pin Assignments - Dual 11 Pin Type Connector 1 (Upper):

Pin	Function
1	Power, Hot or (+)
2	Power, Neutral or (-)
3	No Connection
4	No Connection
5	Relay Output Ch 1, Common
6	Relay Output Ch 1, Normally Open (N.O.)
7	Ch 1. Loop
8	Ch 1. Loop
9	No Connection
10	Relay Output Ch 1, Normally Closed (N.C.)
11	No Connection

Connector 2 (Lower):

Pin	Function
1	No Connection
2	No Connection
3	No Connection
4	No Connection
5	Relay Output Ch 2, Common
6	Relay Output Ch 2, Normally Open (N.O.)
7	Ch 2. Loop
8	Ch 2. Loop
9	No Connection
10	Relay Output Ch 2, Normally Closed (N.C.)
11	No Connection

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

Available Models & Configurations: See "Access Control" Quick Reference Guide.

Factory Default Settings (per channel):

Sensitivity Level: Level 1
 Output Configurations: Relay = TruePres. (Infinite)
 Sensitivity Boost: OFF
 Frequency: High

