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# MODEL AVI-B

## AUTOMATIC VEHICLE IDENTIFICATION (AVI) RECEIVER

### INSTALLATION AND OPERATING INSTRUCTIONS

#### I. General

*Please verify source voltage before applying power.* The model designation indicates the input power required for the receiver and factory preprogrammed code as follows.

**Model AVI-B-x-xxx** ← Unique receiver code (one of 19,683 possible codes)



The Model AVI-B Automatic Vehicle Identification (AVI) Receiver identifies vehicles equipped with a uniquely coded transmitter and provides an opening signal for the gate or door operator. The receiver uses an antenna loop coil installed in the road surface to receive the transmitter's code. The transmitter must pass directly over and within three (3) feet of the receiver's antenna loop coil. The receiver is factory programmed to identify a specific transmitter code and does not require any adjustments or setup. The receiver is fully operational within two (2) seconds after application of power. A high-intensity LED on the front of the receiver indicates the presence of a valid-coded transmitter within the antenna loop area.

#### II. Antenna Loop Requirements

**Antenna Loop Area** - The maximum area that can be covered by the antenna loop coil is 150 square feet.

**Antenna Loop Turns** - The loop coil should have a minimum of two (2) turns of wire for loops up to 75 square feet and a minimum of three (3) turns of wire for loops between 75 square feet and 150 square feet.

**Antenna Loop Feeder Length** - 300 feet (91 meters) maximum with proper feeder cable and appropriate loops (see Antenna Loop Installation). **NOTE: Contact a Technical Support representative at Reno A&E for advice on loop feeder lengths in excess of 300 feet.**

**Antenna Loop Inductance Range** - There are no inductance requirements.

**Response Time** - The receiver will reliably recognize a valid coded transmitter remaining within the area of the antenna loop coil for a minimum of 75 milliseconds.

**Presence Time** - Once a valid coded transmitter has been recognized, the receiver will output a signal as long as the transmitter is over the antenna loop coil and for a period of two (2) seconds after the transmitter leaves the loop coil.

**Antenna Range** - The transmitter must be directly over and within 3 feet of the antenna loop.

**Lightning Protection** - The receiver can tolerate, without damage, a 10 microfarad capacitor charged to 2000 volts being discharged directly into the antenna loop coil input terminals, or a 10 microfarad capacitor charged to 2000 volts being discharged between either antenna loop coil terminal and earth ground.

#### III. Receiver Requirements

**Power** - 89 to 135 VAC, 50/60 Hz, 6 Watts maximum (Model AVI-B-1) or 12.0 to 24.0 VDC, 6 Watts maximum / 12.0 to 24.0 VAC, 50/60 Hz, 6 Watts max. (Model AVI-B-8).

**Relay Ratings** - The relay contacts are rated for 6 Amps maximum, 150 VDC maximum, 300 VAC maximum and 180 Watts maximum switched power.

**Operating Temperature** - -40°F to +180°F (-40°C to +82°C).

**Connector** - Front panel mounted, 10-pin MS style connector (MS3102A-18-1P).

#### IV. Pin Connections (Reno A&E Wiring Harness Model 801-4)

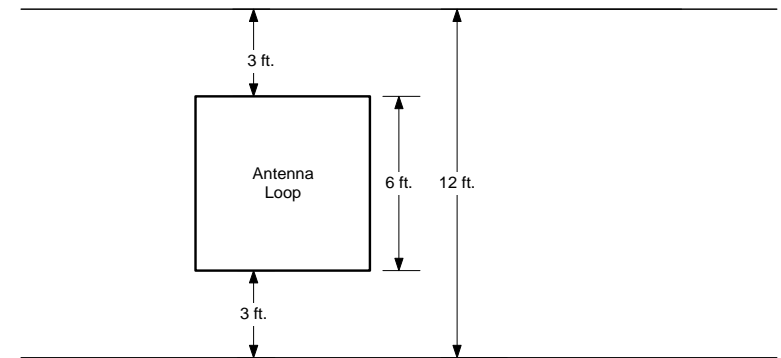
Pin	Function	Wire Color
A	AC Neutral / DC Common	White
B	Relay Output, Normally Open (N.O.)	Brown
C	AC Line / DC +	Black
D	Antenna Loop	Red
E	Antenna Loop	Orange
F	Relay Output, Common	Yellow
G	Relay Output, Normally Closed (N.C.)	Blue
H	Chassis Ground	Green
I	No Connection	Violet
J	No Connection	Gray

#### V. Antenna Loop Installation

The installation procedures for the antenna loop are similar to those of an inductive loop. However, the AVI-B Receiver does not have the inductance range requirements of an inductive loop detector. Therefore, the antenna loop does not require as many turns of wire as an inductive loop. The AVI-B Receiver requires a minimum of two (2) turns of wire for loops up to 75 square feet and a minimum of three (3) turns of wire for loops between 75 square feet and 150 square feet. The antenna loop can be placed in very close proximity to inductive loops without any interference. In fact, if an inductive loop is also required, the antenna loop can be placed in the same saw cut as the inductive loop. Each inductive loop detector may react differently.

Two methods of installing the AVI-B Receiver antenna loop will be described; **Without an Inductive Loop** and **With an Inductive Loop**. With either method, it is important to select the antenna loop size so the transmitter will cross directly over the loop area. The antenna loop area must be less than 150 square feet and the feeder cable length from the antenna loop to the AVI Receiver must be less than 300 feet. **NOTE: Contact a Technical Support representative at Reno A&E for advice loop feeder lengths in excess of 300 feet.**

**Example:** If the road is 12 feet wide and the transmitter is mounted in the center of the vehicle under the front bumper, a 6 foot wide antenna loop would ensure that the transmitter would cross directly over the loop.

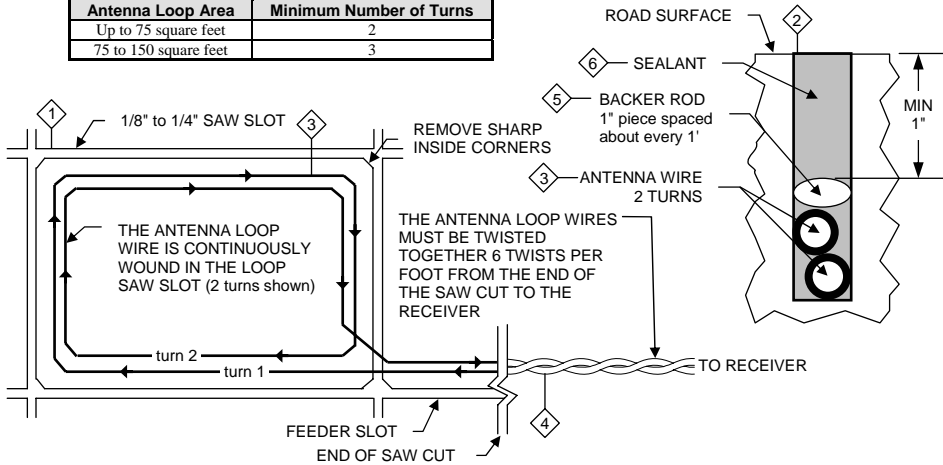


**SPECIAL NOTE**  
 If multiple antenna loops are used, they must be connected in *parallel*, not series.

### i. Antenna Loop Installation Without an Inductive Loop

- 1 Mark the antenna loop layout on the pavement. Ensure that the layout does not have sharp inside corners that can damage the antenna wire insulation.
- 2 Set the saw to cut to a depth (typically 2" to 2.5") that insures a minimum of 1" from the top of the wire to pavement surface. The saw cut width should be larger than the wire diameter to avoid damage to the wire insulation when placed in the saw slot. Cut the loop and feeder slots. Remove all debris from the saw slot with compressed air. Check that the bottom of the slot is even.
- 3 It is highly recommended that a continuous length of wire be used to form the antenna loop and feeder to the AVI-B receiver. For best results, use Reno A&E LW-120 wire or equivalent wire for the antenna loop and feeder. Use a wood stick or roller to insert the wire to the bottom of the saw slot (do not use sharp objects). Wrap the antenna wire in the loop saw slot to form the two or three turn antenna loop.
- 4 The antenna loop wire must be twisted together a minimum of six (6) twists per foot from the end of the feeder saw slot to the receiver.
- 5 The wire must be held firmly in the loop saw slot with 1" pieces of backer rod every 1 to 2 feet. This prevents the wire from floating when the loop sealant is applied.
- 6 Apply the sealant. The sealant selected should have good adhering properties with similar contraction and expansion characteristics to that of the pavement material.

Antenna Loop Area	Minimum Number of Turns
Up to 75 square feet	2
75 to 150 square feet	3



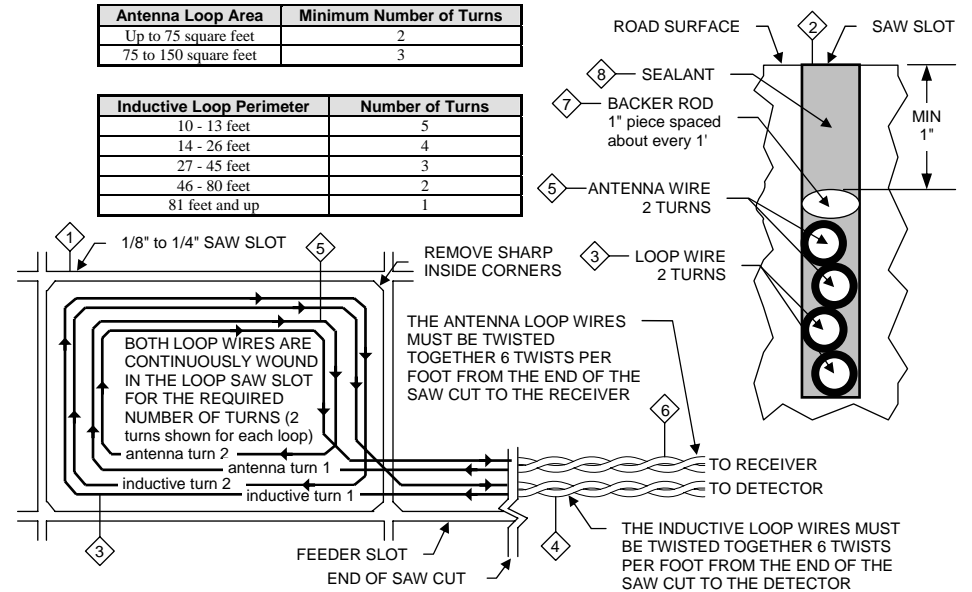
### ii. Antenna Loop Installation With an Inductive Loop

- 1 Mark the antenna loop / inductive loop layout on the pavement. Ensure that the layout does not have sharp inside corners that can damage the antenna wire insulation.
- 2 Set the saw to cut to a depth (typically 3" to 3.5") that insures a minimum of 1" from the top of the wire to pavement surface. The saw cut width should be larger than the wire diameter to avoid damage to the wire insulation when placed in the saw slot. Cut the loop and feeder slots. Remove all debris from the saw slot with compressed air. Check that the bottom of the slot is even.
- 3 It is highly recommended that a continuous length of wire be used to form the inductive loop and feeder to the detector. For best results, use Reno A&E LW-120 wire or equivalent wire for the inductive loop and feeder. Use a wood stick or roller to insert the wire to the bottom of the saw slot (do not use sharp objects). Wrap the inductive loop wire in the loop saw slot to form the inductive loop.
- 4 The detector inductive loop wire must be twisted together a minimum of six (6) twists per foot from the end of the feeder saw slot to the detector.

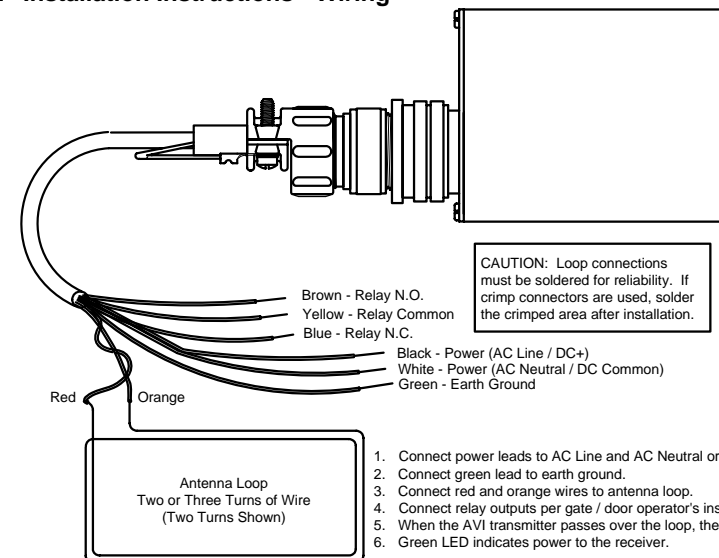
- 5 It is highly recommended that a continuous length of wire be used to form the antenna loop and feeder to the AVI-B receiver. For best results, use Reno A&E LW-120 wire or equivalent wire for the antenna loop and feeder. Use a wood stick or roller to insert the wire to the bottom of the saw slot (do not use sharp objects). Wrap the antenna wire in the loop saw slot to form the two or three turn antenna loop.
- 6 The antenna loop wire must be twisted together a minimum of six (6) twists per foot from the end of the feeder saw slot to the receiver.
- 7 The wires must be held firmly in the loop saw slot with 1" pieces of backer rod every 1 to 2 feet. This prevents the wires from floating when the loop sealant is applied.
- 8 Apply the sealant. The sealant selected should have good adhering properties with similar contraction and expansion characteristics to that of the pavement material.

Antenna Loop Area	Minimum Number of Turns
Up to 75 square feet	2
75 to 150 square feet	3

Inductive Loop Perimeter	Number of Turns
10 - 13 feet	5
14 - 26 feet	4
27 - 45 feet	3
46 - 80 feet	2
81 feet and up	1



### VI. Installation Instructions - Wiring



1. Connect power leads to AC Line and AC Neutral or DC+ and DC Common.
2. Connect green lead to earth ground.
3. Connect red and orange wires to antenna loop.
4. Connect relay outputs per gate / door operator's instructions.
5. When the AVI transmitter passes over the loop, the red LED should illuminate.
6. Green LED indicates power to the receiver.