

## AVI-FCT TRANSMITTERS

### Operating and Installation Instructions

#### I General

The Automatic Vehicle Identification (AVI) Transmitters Models AVI-FCT and AVI-ATT, are intended for installation on the underside of vehicles. The transmitters should be powered from the vehicle's electrical system. For security and anti-theft, the AVI-ATT transmitter unlike the AVI-FCT transmitter has its intelligence (the part which generates the identification code for transmission) in a separate enclosure, AVI-ATC (see product data sheet and op instructions), mounted higher up in the engine compartment typically installed near the battery and not accessible from the outside of a locked vehicle.



**Figure 1. AVI-FCT**

Model	Operating Voltage	Power Consumption	Number of Codes
AVI-FCT-n	10 to 40 VDC	140 milliamps (typical)	One (1)
AVI-ATT & AVI-ATC-n	10 to 40 VDC	140 milliamps (typical)	One (1)
AVI-MCT	10 to 40 VDC	140 milliamps (typical)	User Defined, Multiple codes

The first two models in the above table transmit a single code; the code is defined by “n”. Transmitter default codes are factory programmed at the time of manufacture and if required at a later date can be changed in the field to a different code via internal DIP switches (see operational instructions for the individual model). A change in the transmitter code would consequently require a change to the same code in the corresponding AVI receiver in use typically located at the access point of the property.

The third model listed can transmit user defined multiple codes. The codes and multiple modes of operation are accessible and configurable via a WIFI link using any smart phone with its hot spot option turned on. Internet browser of the phone is used as the interface. Also there is an internal micro B USB port. This model has built in anti-theft features as well as further facility and unit security features, refer to operational manual and instructions of the model.

Additionally, these units require no potting and are therefore repairable. A quick disconnect is provided allowing quick removal and replacement.

For those customers purchasing the single code transmitters (AVI-FCT and AVI-NCT), each customer receives a unique code; only the 911 code is reserved for those transmitters deployed by first responders, such as police and fire departments. The single code transmitters has the code identified on the label located on the transmitter at the time of shipment.

These transmitters are rated for continuous operation and are powered from the vehicle's DC power. To prevent the possibility of discharging the vehicle's battery, Reno A&E recommends the transmitter is connected and powered from the switched side of a vehicle's ignition switch. This connection ensures the transmitter is powered only when the vehicle is in use. When powered, the transmitter continuously emits the coded signal(s).

When the transmitter is in close proximity or directly above the in-pavement detection loop the AVI receiver reads the coded AVI signal. Reno A&E offers different types of AVI receivers, e.g. Model AVI-B (Single code AVI receiver), Model BT-AVI (Combined single channel loop detector and single code AVI receiver), Model AVI-E (two channel multiple code AVI receiver), etc.

For new internet ready multi-code receivers, the model AVI-MCR is a box type combined single channel loop detector and multi-code AVI receiver using a single installed loop. The AVI-MCRL is a box-type multi-code AVI receiver and combined loop detector. Both the AVI-MCR and MCRL also have brackets available for different mounting options, for example DIN rail verses direct wall mounting. Finally, the AVI-E is a NEMA and CALTRAN standard card rack two-channel multi-code combined loop detector and AVI receiver.

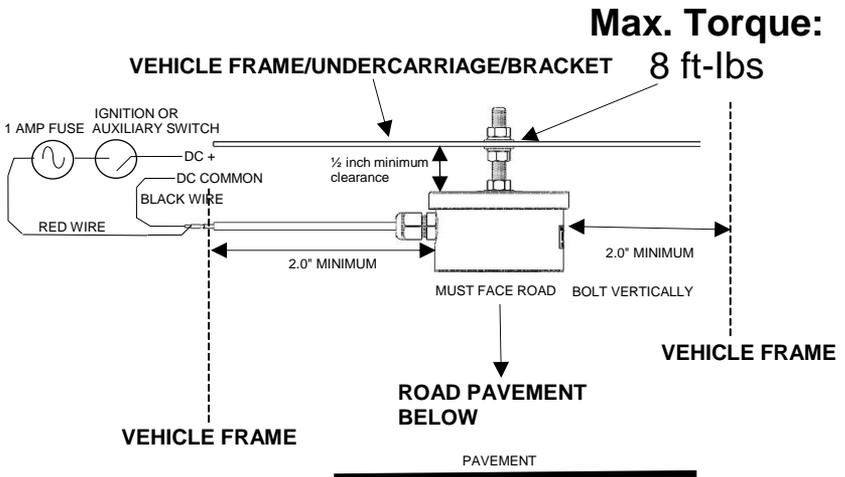
Both the single code and multi-code code receivers accommodate a wide range of AVI applications.

It is imperative, the vehicle transmitter is installed on a vehicle per the below instructions paying particular attention to the minimum clearance distance between the metal of the vehicle and the installed transmitter.

The transmitter works on the principle of modulating a time varying magnetic field; consequently, any metal in very close proximity of the transmitter causes that transmitter to pull and dissipate significantly more power. The dissipated power results in substantial heating of the transmitter and can cause at length the transmitter to shut down on over temperature in order to protect itself from damage. After a short cooldown period, the transmitter will start back up and again transmit.

Also with the very close proximity of metal to the transmitter, the transmitter becomes partially shielded from the roadway installed loop impacting and possibly preventing code transmission to be detected by the receiver connected to that loop.

Finally, required for effective transmitter operation is the close observance of the installed orientation of the transmitter. The transmitter must be installed in the same orientation as showed in figure 2. Inverting the orientation or installing at an angle will greatly reduce the signal strength of the transmitter and height to which it can be installed at on the vehicle.



## AVI-FCT Transmitter Installation and Orientation

Figure 2

### II. Installation Instructions

The AVI transmitter should be permanently attached to the underside of the vehicle, somewhere behind the front bumper. Consistent detection of the vehicle's AVI code requires the transmitter to be in close proximity of the loop. Proper installation of the transmitter is essential for reliable operation. Figure 2.

The power cable should *not* be attached to the vehicle in any way that would result in the cable being stressed. The positive (+) wire (red) of the power cable should be fused with a one-amp fuse to protect the vehicle's electrical system if the power cable is damaged. The black wire (-) should be connected directly to the negative side of the vehicle's DC electrical system. Poor electrical connections through the vehicles chassis may cause problems.

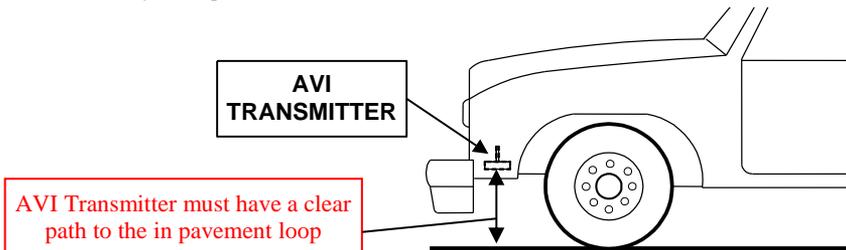


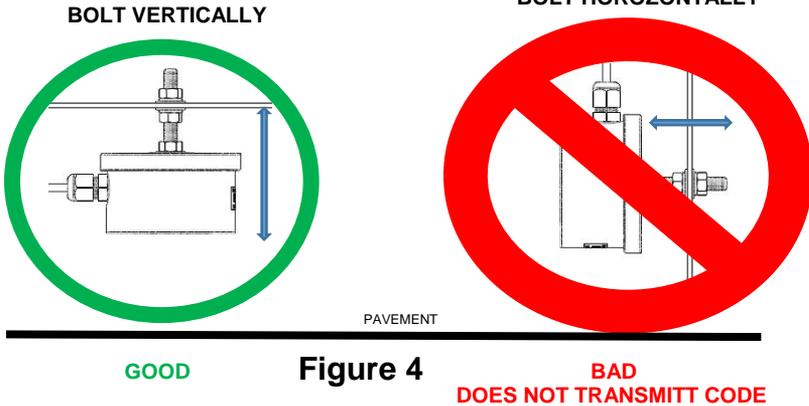
Figure 3

**NOTES:** *The transmitter must be installed with a clear path between the transmitter and the in pavement loop.*

*To provide protection against damage from road debris, locate the transmitter in a protected position.*

*The wire insulation should be removed in a way that insures the copper strands are not cut or damaged. If terminals are connected to the red and/or black wire, the terminals should be sized for # 22 AWG wire. Crimp connections should be made directly to the copper wire.*

## TRANSMITTER MOUNTING ORIENTATION



## WARNING:

The transmitter must not be located directly above metal surfaces, or in close proximity to heat sources such as exhaust pipes and mufflers. Failure to observe this requirement will significantly shorten the life of the transmitter. The transmitter's mounting bolt *must* be in the vertical orientation. If the mounting bolt is in the horizontal orientation, the AVI Transmitter will not transmit the code

### III. Code Reader

The Reno A&E Model CR-100 or CR-200 code reader is a portable hand held device for verifying transmitter operation and the code numbers. Both models require their probe to be within 1.5 feet of the vehicle transmitter in order to pick up the transmitted code. If using the older model CR-100 code reader, the probe also must be away from the transmitter by a few inches.



Figure 5

Model CR-100 in use (Code 9841 being read).