

# 451M Micro Door Lock Relay Module

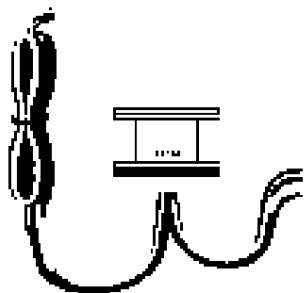
INTERFACES WITH ALL REMOTE CONTROL SYSTEMS  
WITH (-) PULSED DOOR LOCK OUTPUTS

## Product Description

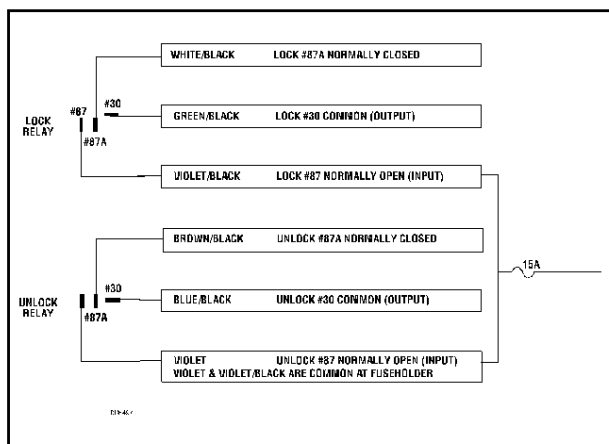
The door lock relay module will interface with most electric power door lock systems drawing 30 amps or less: relay-controlled, one wire, and direct-wired reversing-polarity types. It can also drive aftermarket door lock actuators, which must be added in the driver's door, and post-1985 Mercedes-Benz and Audi vacuum-driven systems if driven by a system with selectable-duration pulses (three second minimum requirement).

## 3-Pin Plug Interface with DEI® System

GREEN	(-) Lock Trigger
RED	(+) 12 Volt
BLUE	(-) Unlock Trigger



## Built-in Relay Wiring Harness



## Identifying the Door Lock Switch System

The easiest way to determine what type of door lock system you are working with is to remove the master locking switch itself, which is usually on the driver's door or on the center console. Once you have determined which type of factory door lock circuit you are working with and the color codes of the switch wires to be used, you can usually simplify the installation by locating the same wires in the vehicle's kick panel.

**NOTE:** The wires should be re-tested at this point to be sure they work the same at the kick panel. If no central locking switch is found, the installation may require a door lock actuator.

There are eight different types of common door lock circuits (some vehicles use more unusual systems):

- Type A - Three wire (+) 12 volt pulse controlling factory lock relays.
- Type B - Three wire (-) ground pulse controlling factory lock relays.
- Type C - Directly-wired (no factory relays) reversing-polarity switches.
- Type D - Aftermarket actuator-driven systems. These include slave systems without an actuator in the driver's door but with factory actuators in all the other doors, since these can be controlled with the installation of an aftermarket actuator.
- Type E - Electronically-activated vacuum systems (post-1985 Mercedes-Benz and Audi). This requires special programming of the system.

**NOTE:** This is only possible with systems with selectable duration lock pulses (three second minimum required).

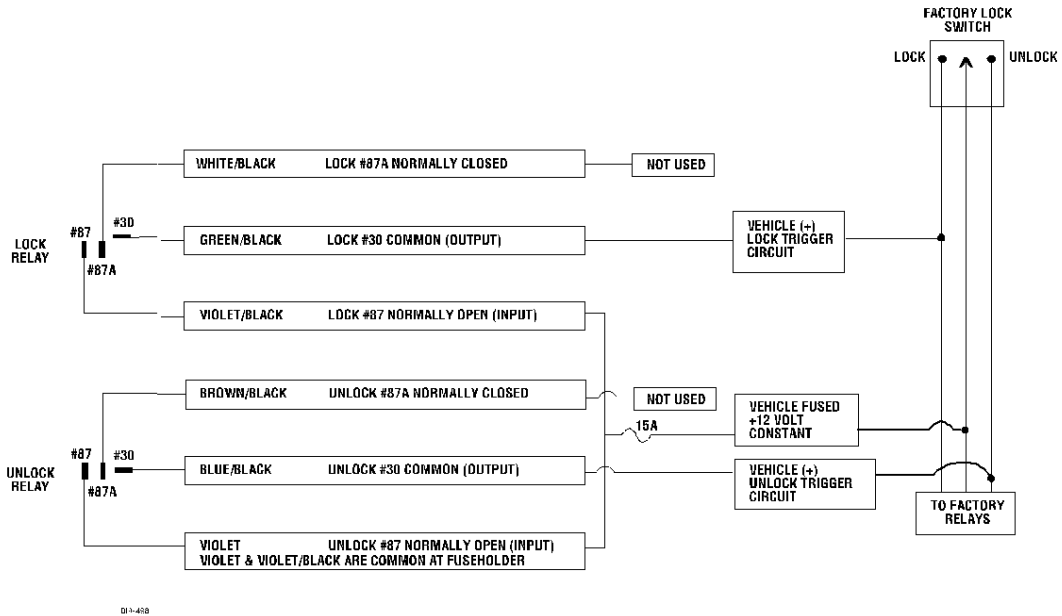
- Type F - This is a one wire system. Ground pulse to unlock and break open to lock.
- Type G - This is a one wire positive multiplex system. Sending a (+) 12 volt signal through resistors will activate lock and unlock.
- Type H - This is a one wire negative multiplex system. Sending a negative signal through resistors will activate lock and unlock.

## Door Lock Systems Information

This is a general information guide; For more detailed instructions on wiring vehicles door lock systems, including information on multiplex systems, refer to the Door Lock Wiring Guide (Document #1041) available to authorized dealers at [www.directechs.com](http://www.directechs.com) or through the DirectFax system.

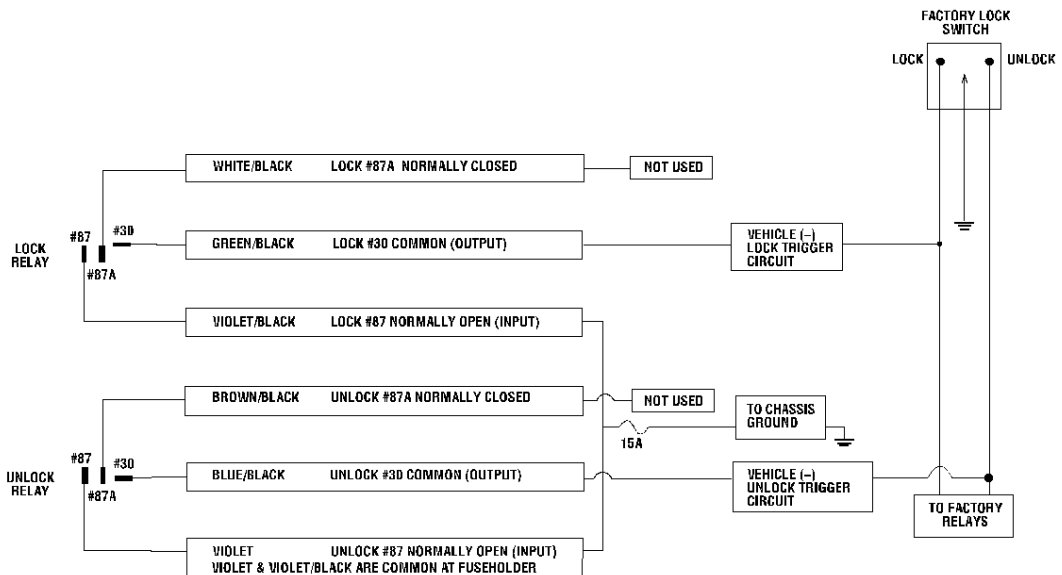
## Wiring Diagram A

### (+) 12 Volt Pulses Driving Factory Relays



## Wiring Diagram B

### (-) Ground Pulses Driving Factory Relays



## Wiring Diagram C

### Directly-Wired Reversing-Polarity Switch Circuits

Use these instructions if the power door lock switch has four or five heavy-gauge wires. This type of switch has two outputs that rest at (-) ground.

**NOTE:** Interfacing with these systems will require you to cut two switched leads. The 451M module must duplicate the factory door lock switches' operation. Protect the VIOLET/BLACK wire of the module with a 20A fuse.

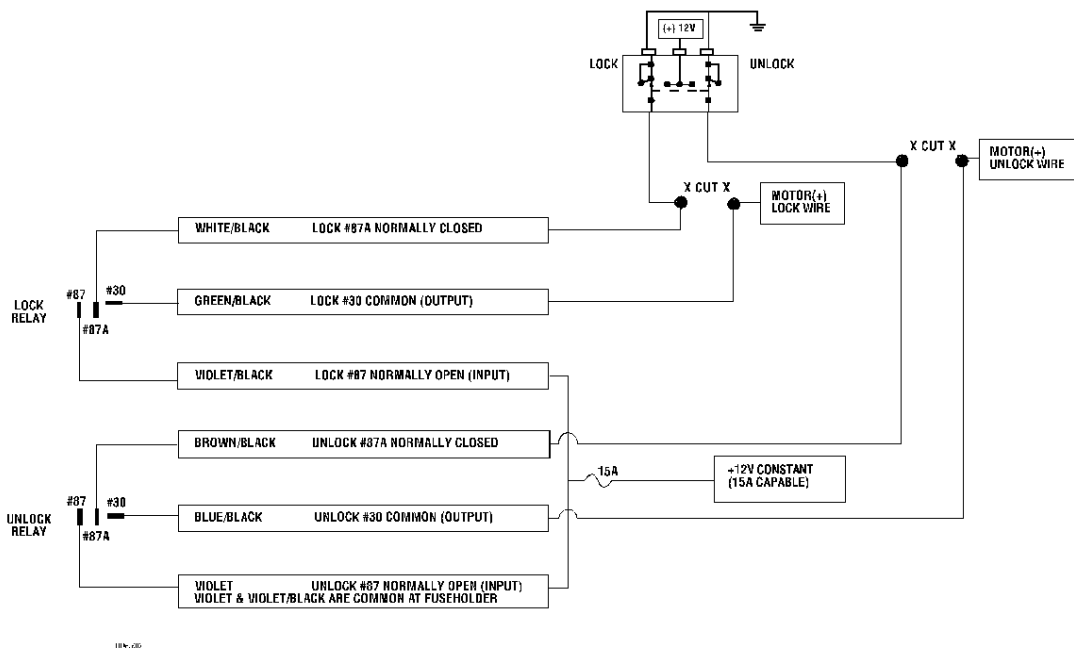
One of the wires from the switch is a constant (+) 12 volt power source. The VIOLET/BLACK wire of the door lock module can be connected to this for constant (+) 12 volt, if desired.

In all cases, the BROWN/BLACK and WHITE/BLACK inputs to the module must be connected to the switch side of the lock and unlock wires. The switch side is the side that still rests at ground after the wire is cut. If both sides seem to rest at ground after you have only cut one of the switch leads, cut the other switch lead and re-rest.

**IMPORTANT!** If these are not connected properly you will send (+) 12 volts directly to (-) ground, possibly damaging the module or the factory switch.

- **WHITE/BLACK** - Locate and cut the lock output of the switch. Test both sides of the wire for (-) ground with the switch in the middle position. Also test for (+) 12 volt with the switch in the lock position. Connect this wire to the switch side of the cut lock wire.
- **GREEN/BLACK** - Connect the GREEN/BLACK wire to the other side of the the lock wire you have cut. This wire goes directly to the lock motor.
- **BROWN/BLACK** - Locate and cut the unlock output of the switch. Test both sides of the wire for (-) ground with the switch in the middle position. Also test for (+) 12 volt with the switch in the lock position. Connect the BROWN/BLACK to the switch side of the cut lock wire.
- **BLUE/BLACK** - Connect the BLUE/BLACK wire to the other half of the cut unlock wire.
- **VIOLET/BLACK** - This wire must be connected to a constant (+) 12 volts. The best connection point for this wire is the constant (+) 12 volt supply for the door lock switch or directly to the (+) battery post with a fuse at the battery post.

**NOTE:** Most direct-wired power lock systems require 20-30 amps of current to operate. Connecting the VIOLET/BLACK wire to a poor source of voltage will keep the door locks from operating properly.

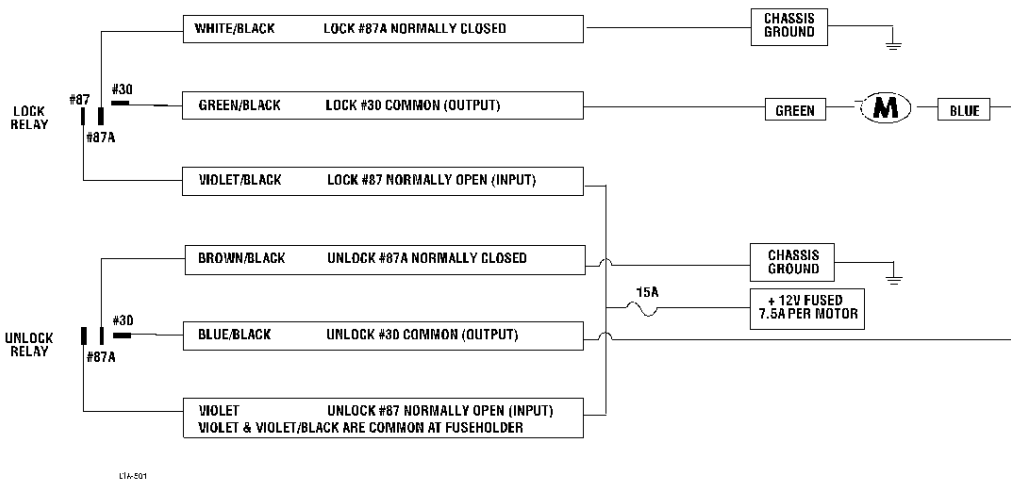


## Wiring Diagram D

### Aftermath Actuators

Vehicles without factory power door locks require the installation of one actuator per door. This requires mounting the door lock

actuator inside the door. Other vehicles may only require one actuator installed in the driver's door, if all door locks are operated when the driver's lock is used.



## Wiring Diagram E

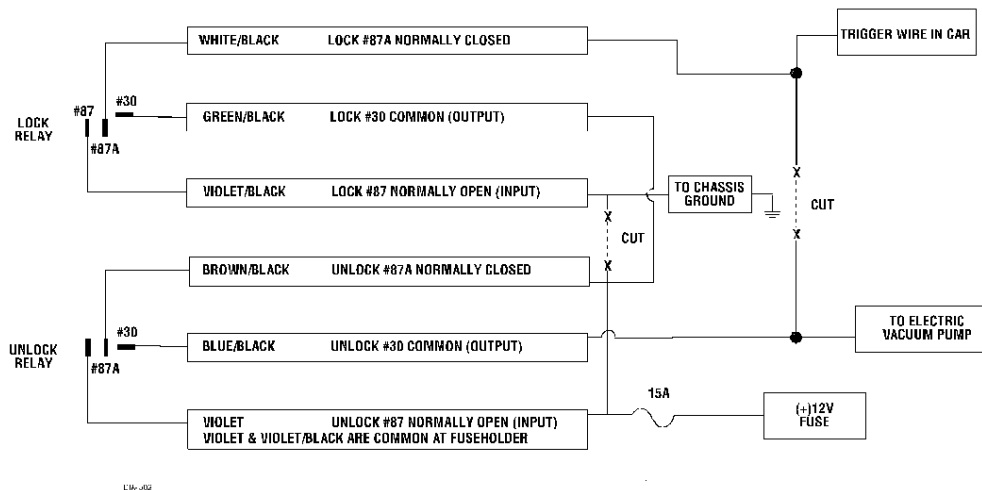
### Mercedes-Benz and Audi

In Mercedes-Benz and Audi vehicles manufactured in 1985 and later, the door locks are controlled by an electrically activated vacuum pump. This can be controlled by certain security systems if the following wiring scheme is followed and the system is programmed for Mercedes/Audi lock pulse lengths.

The wire to be cut and interrupted in these cars will test to be resting at (-) ground when the doors are locked, and rest at (+) 12 volt when the doors are unlocked.

This wire can be found in either kick panel in the Mercedes-Benz. It is BLUE in the driver's kick panel and GREEN in the passenger kick panel. In Audis, the driver's side wire is often GREEN/BLUE or GREEN/RED.

**IMPORTANT!** Remember that the VIOLET jumper between the #87 lock terminal and the #87 unlock terminal must be cut.

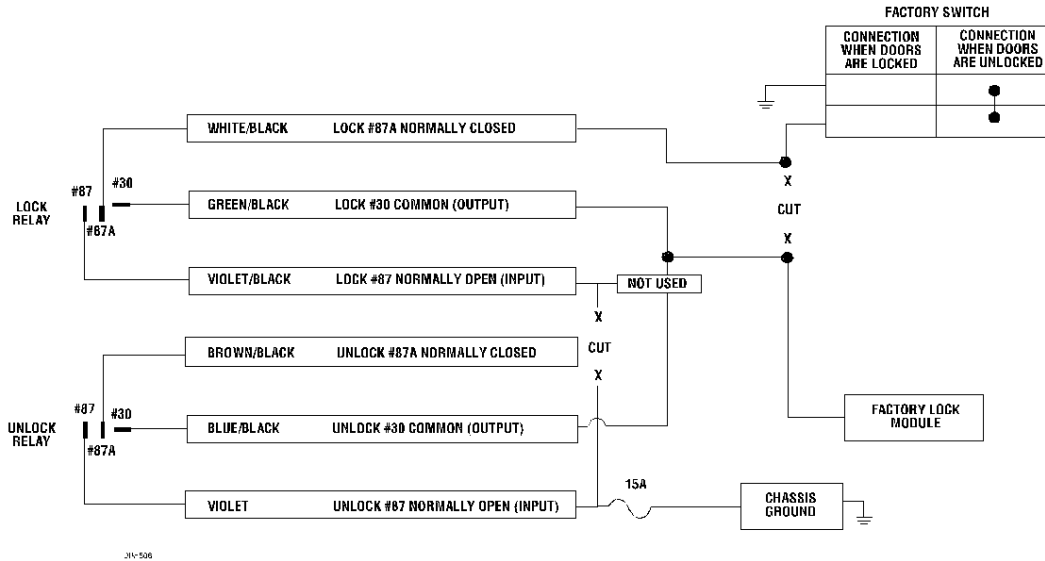


## Wiring Diagram F

### One-Wire System - Cut to Lock, Ground to Unlock

This system usually requires a negative pulse to unlock and a cut wire to lock the door. (These are reversed in some vehicles.) It is found in the late-model Nissan Sentra, some Nissan 240SX, and Nissan 300ZX, 1992 and later. It is also found in some Mazda MPVs.

**IMPORTANT!** Remember that the VIOLET jumper between the #87 lock terminal and the #87 unlock terminal must be cut.



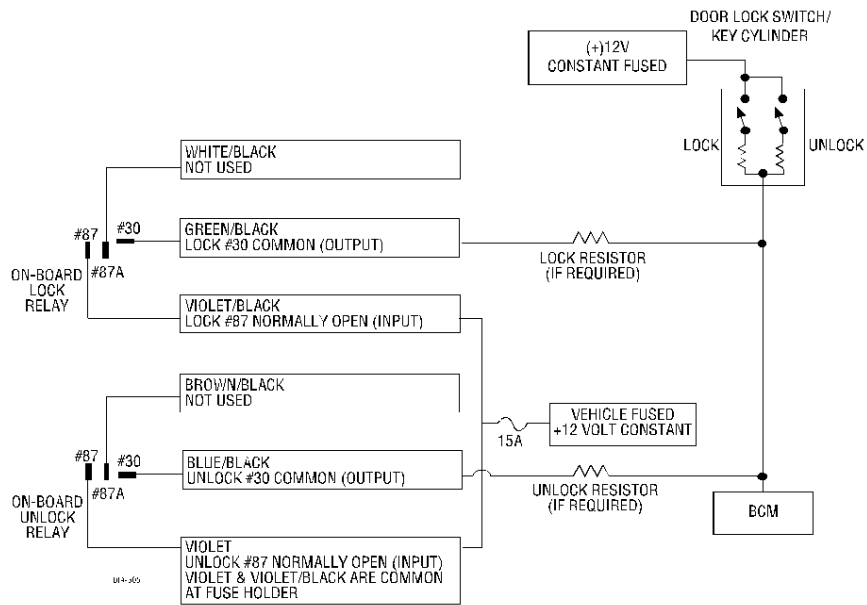
## Wiring Diagram G

### (+) Positive Multiplex

To determine the resistor values, the door lock switch/key cylinder must be isolated from the factory door lock system. For testing, use a calibrated digital multimeter that is set to ohms.

**IMPORTANT!** To ensure an accurate resistance reading, do not touch the resistor or leads during testing.

1. Cut the output wire from the door lock switch/key cylinder in half.
2. Test with the meter from the switch side of the cut door lock switch/key cylinder wire to a reliable constant (+)12V source. Some good constant (+)12V references are the power input source to the door lock switch/key cylinder, the ignition switch power wire, or the (+) terminal of the battery.
3. Operate the door lock switch/key cylinder in both directions to determine the resistor values. If the multimeter displays zero resistance in one direction, no resistor is needed for that direction.
4. Once the resistor value(s) is determined, refer to the wiring diagram for proper wiring.



## Wiring Diagram H

### (-) Negative Multiplex

To determine the resistor values, the door lock switch/key cylinder must be isolated from the factory door lock system. For testing, use a calibrated digital multimeter that is set to ohms.

**IMPORTANT!** To ensure an accurate resistance reading, do not touch the resistor or leads during testing.

1. Cut the output wire from the door lock switch/key cylinder in half.
2. Test with the meter from the switch side of the cut door lock switch/key cylinder wire to a reliable ground source. Some

good ground references are the ground input source to the door lock switch/key cylinder or battery ground.

3. Operate the door lock switch/key cylinder in both directions to determine the resistor values. If the multimeter displays zero resistance in one direction, no resistor is needed for that direction.
4. Once the resistor value(s) is determined, refer to the wiring diagram for proper wiring.

