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# ***Dakota Digital***

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## **CMD-8000 rev. A COMMANDER SERIES REMOTE CONTROL ENTRY SYSTEM**

### **INTRODUCTION**

Thank you for purchasing the CMD-8000 Commander from Dakota Digital. This, along with many other products that Dakota Digital has to offer, represents the latest in electronics technology for the street rod, classic car, sport truck, or custom vehicle.

The CMD-8000 comes complete with receiver/controller, one key chain transmitter, one sealed emergency release switch, and two window relay packs. The unit can be installed and configured to remotely release the driver's and passenger's door latches, provide up and down control of both the driver and passenger side window, as well as release the trunk latch. In addition to this, two auxiliary outputs are provided for external relays. These auxiliary relays can be used to open and close a trunk lift motor, turn on lights, operate power door locks, or any other electric accessory.

The system incorporates a self-resetting circuit protection device on the latch release outputs to protect against short circuits. A safety feature partially disables the system when the ignition is on to avoid the accidental opening of a door during vehicle operation. With the ignition on, the only functions that are allowed to work are the control of the power windows. An emergency release switch can be concealed on the underside of the vehicle to open the driver's door should the door ever be closed with the motor running and you on the outside.

### **ADDITIONAL TRANSMITTERS**

The transmitter supplied with your remote system is coded for security. The transmitter code is printed on a label located on the back of your receiver case. The first number is the serial number and the second is your 4-digit transmitter code. A transmitter code of '9000' indicates that your remote system can "learn" up to three different transmitter codes. If you order an additional transmitter give them the code '9000' and you will receive the transmitter along with instructions for teaching the new transmitter to your remote system. These instructions are also printed near the end of this manual.

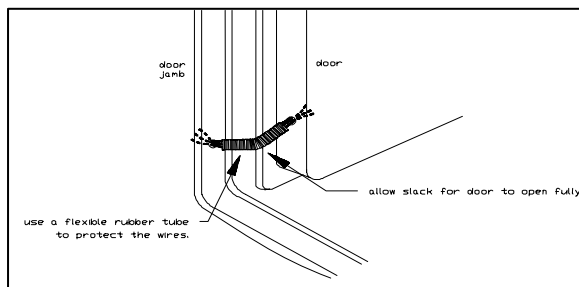
## INSTALLATION

The receiver should be mounted on the interior of the vehicle so that it is not exposed to moisture. It can be secured using the four mounting holes or with a double sided adhesive tape, such as Velcro. The black wire coming out of the rear of the receiver is the antenna and does not need to be connected to anything. Stretching this wire out away from other electrical wires will enhance the unit's reception.

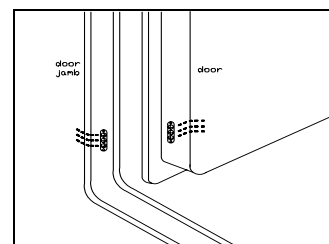
The harness is connected as listed below. The unit only needs the red and black wires connected to operate. The others should be hooked up according to your application. The CMD-8000 should only be connected to a 12 volt battery for power and never solely to a battery charger.

RED	constant 12 volt battery source fused at 25 amps
BLACK	chassis ground
YELLOW	ignition key switched 12 volts
BROWN	driver's door emergency release switch
BLUE	driver's door latch actuator
GREEN	passenger's door latch actuator
PURPLE	trunk release latch actuator
WHITE/RED	trunk lift motor raise relay
WHITE/BLUE	trunk lift motor lower relay
ORANGE	passenger's window up relay
PINK	passenger's window down relay
WHITE	driver's window up relay
GRAY	driver's window down relay

The blue, green, and purple wires are connected to internal relays and can feed 12 volts out at up to 10 amps for the full pulse duration, 15 amps briefly. The white, gray, orange, pink, white w/ red strip, and white w/ blue strip are negative switched outputs designed to only turn on external relays. This combination of internal and external relays was used to reduce the number of wires going through the door jams to a minimum. To eliminate having any wires running through your door jams, use **DAKOTA DIGITAL MAGNUM SHOOTERS**. Refer to the following diagrams for connection to your particular actuators and power windows.



Wiring through door jamb.



Using MAGNUM SHOOTERS!

## RADIO FREQUENCY INTERFERENCE STATEMENT

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B of the FCC Rules. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause interference to radio communications.

The limits are designed to provide reasonable protection against such interference in a residential situation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna of the affected radio or television.*
- *Increase the separation between the equipment and the affected receiver.*
- *Connect the equipment and the affected receiver to separate power circuits.*
- *Consult the dealer or an experienced radio/TV technician for help.*

## MODIFICATIONS

Changes or modifications not expressly approved by Dakota Digital, Inc. could void the user's authority to operate the equipment.

This device complies with part 15 of FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

## DOOR AND TRUNK LATCH WIRING.

Latches and latch actuators are not included in the base kit. These are available separately. If door motors or solenoids are already mounted in the vehicle, the remote entry system can connect directly to them. For solenoids which require more than 10 amps, such as Dakota Digital's PDR-2, an external relay should be used for powering the solenoid.

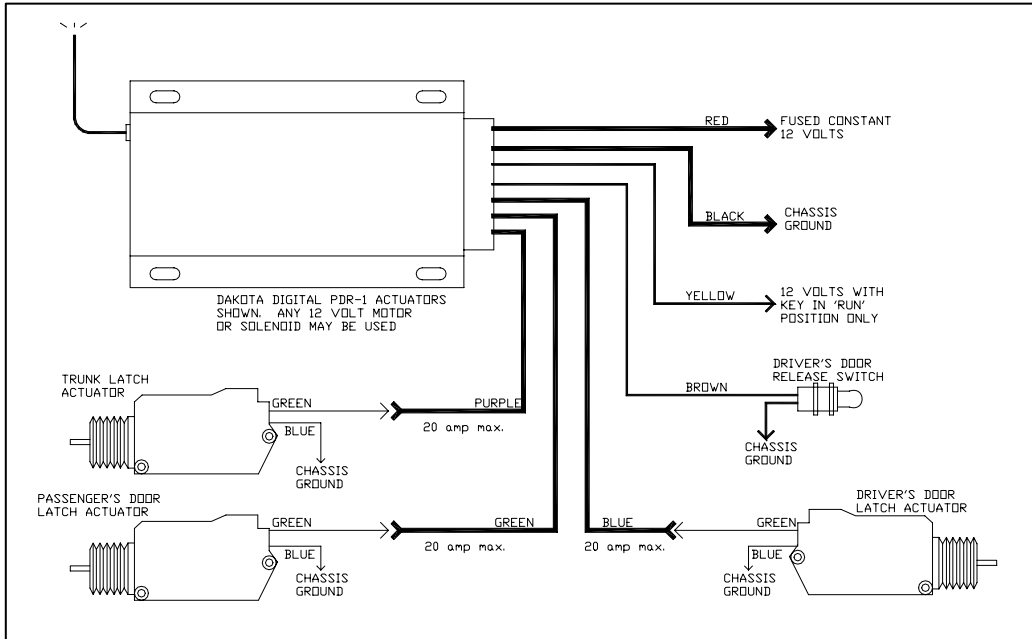


Figure 1. Door and trunk latch wiring diagram.

With the actuators wired as shown, they will pull in when energized. To make them push out, connect the green wire to ground and the blue wire to the remote system.

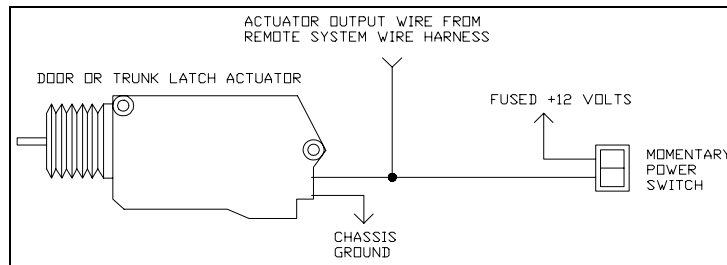


Figure 2. Wiring to control actuator with the remote and an inside switch.

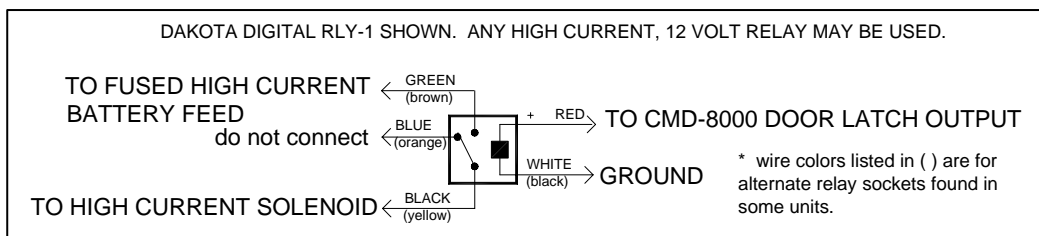


Figure 3. Wiring high current relay to feed door latch actuators.

## POWER WINDOW WIRING

Power window regulators are not included with the remote system base kit. They are available separately from Dakota Digital. This remote system is designed to wire into existing power windows or installed at the same time as power windows are added to the vehicle. Use the diagram which matches the way your power windows are connected. The relays are designed to duplicate the function of the power window switch you are using.

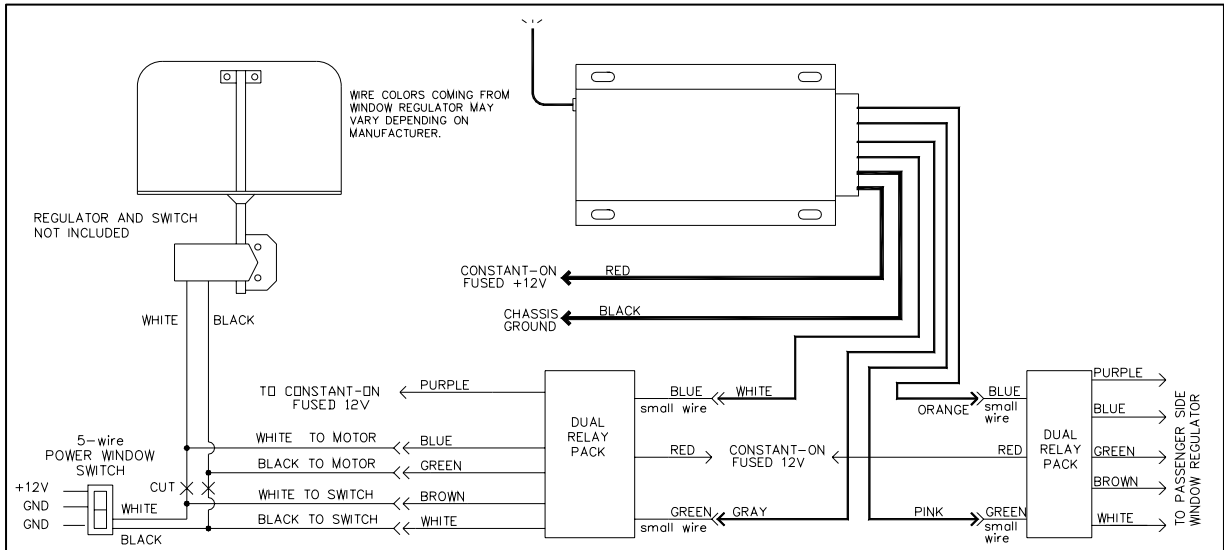


Figure 4. Connection to Specialty, Downs, Balls, GM, and other power window regulators using a 5-wire switch.

This wiring diagram can be used with most power window and switch combinations. The existing switch (or in some cases relays) keep the two wires to the motor grounded when the window is at rest. To move the window up, the “up” wire is switched to 12 volts while the “down” wire remains grounded. To move the window down, the opposite occurs. For both the existing switch and the remote system to be able to move the window, the wires between the switch and the window regulator need to be cut and separated. These wires are then connected to the supplied dual relay pack. One relay in the pack will roll the window up, the other down.

While the remote system itself should not be mounted in the door, the relays can be. Mount them so the wires are going out the bottom. This will prevent water from catching in it.

The wiring for the passenger side is identical to the driver's side.

# POWER WINDOW WIRING

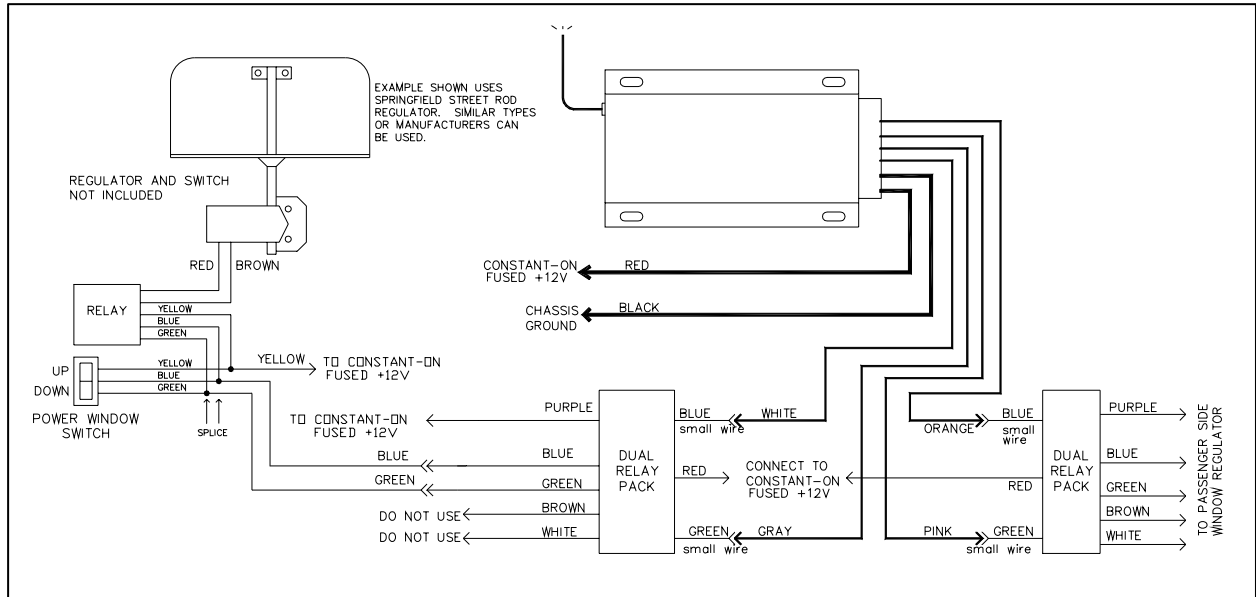


Figure 5. Connection to power window regulators with a three wire 12 volt switch.

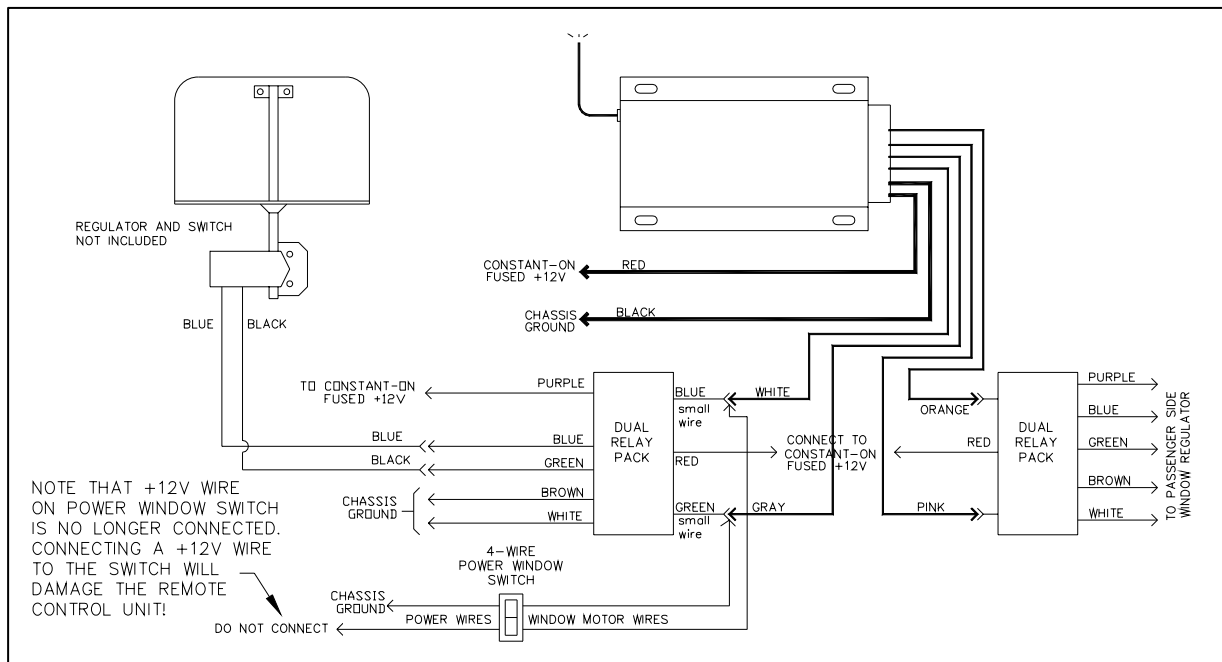


Figure 6. Connection to power windows with 4-wire switch (not center position grounding).

## POWER TRUNK LIFT WIRING

The trunk lift motor and extra dual relay pack (RLY-2) are not included in the base package. These are available from Dakota Digital separately.

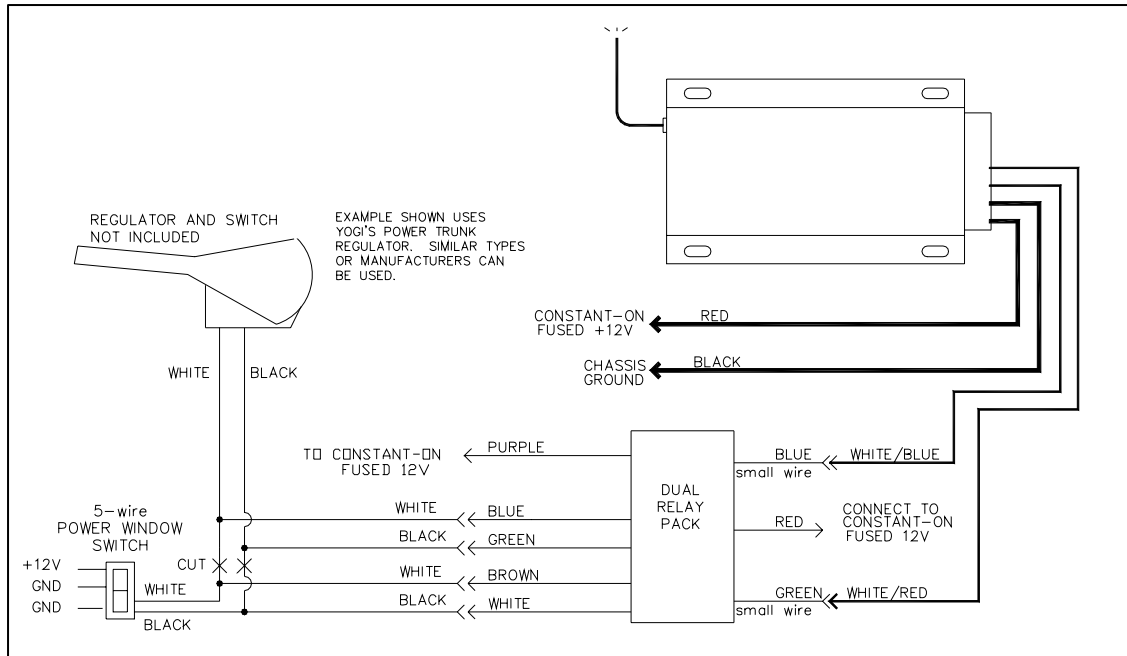


Figure 7. Connection to power trunk lift motor.

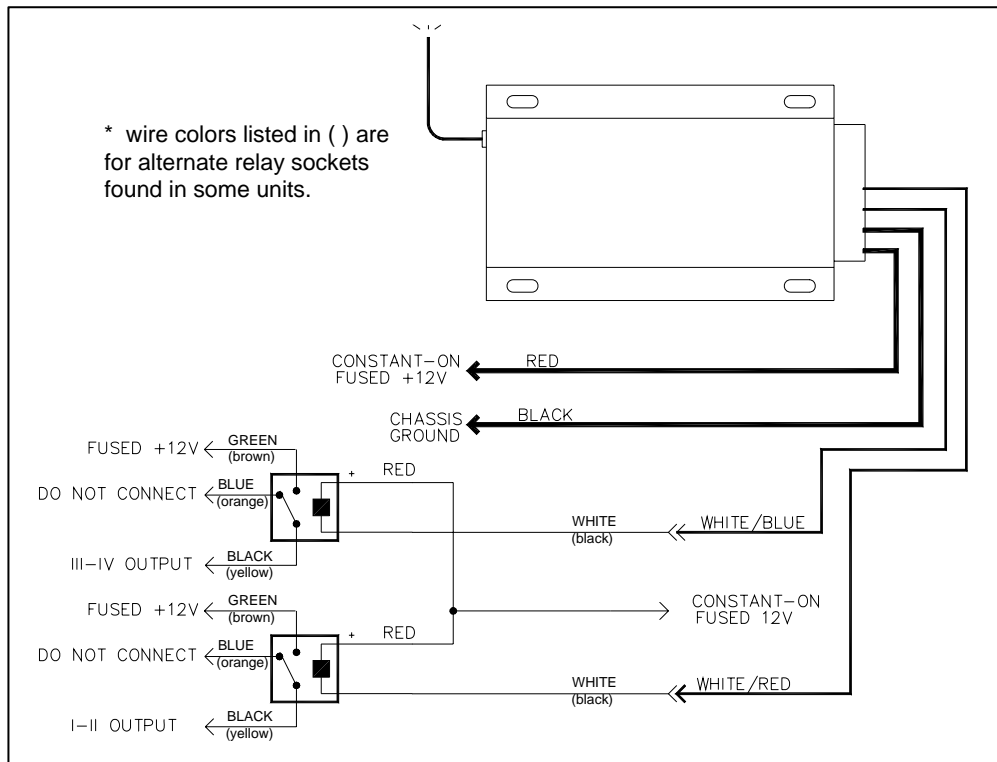


Figure 8. Connection to relays for operating accessories with channel I-II and channel III-IV

## POWER DOOR LOCK WIRING

The “I-II” and “III-IV” channels can also be used for power door locks to add more security to the vehicle. The door lock actuators and extra dual relay pack (RLY-2) are not included with the base package. These are sold separately if they are needed for your application.

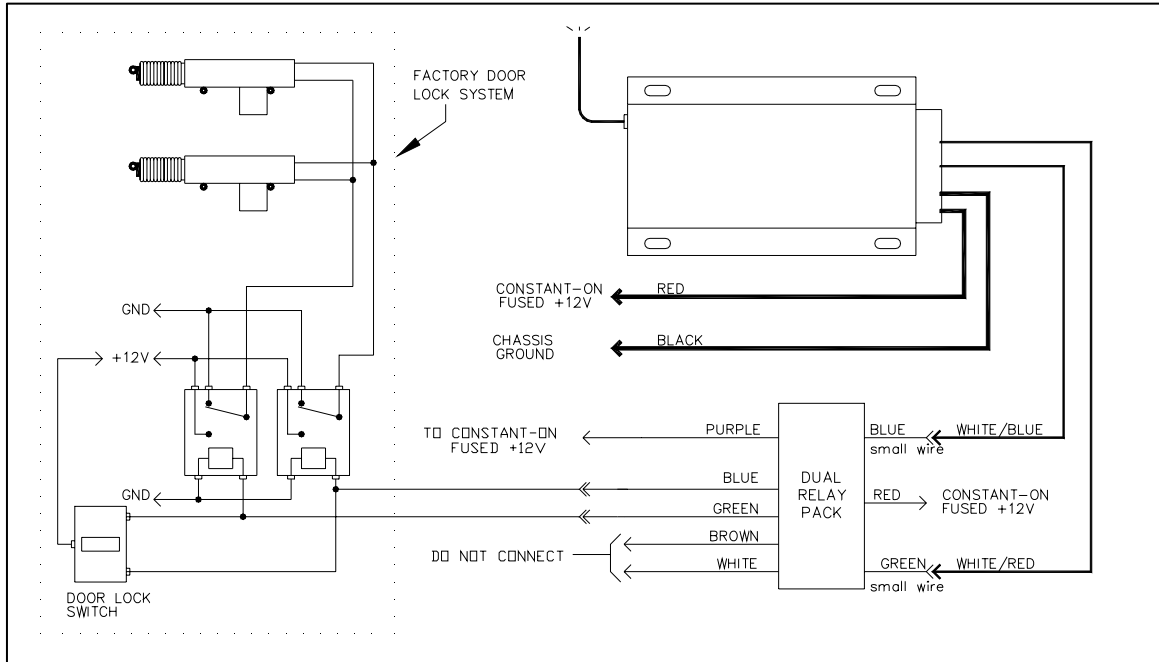


Figure 9. Connection to power door locks with 3-wire, 12 volt switch.

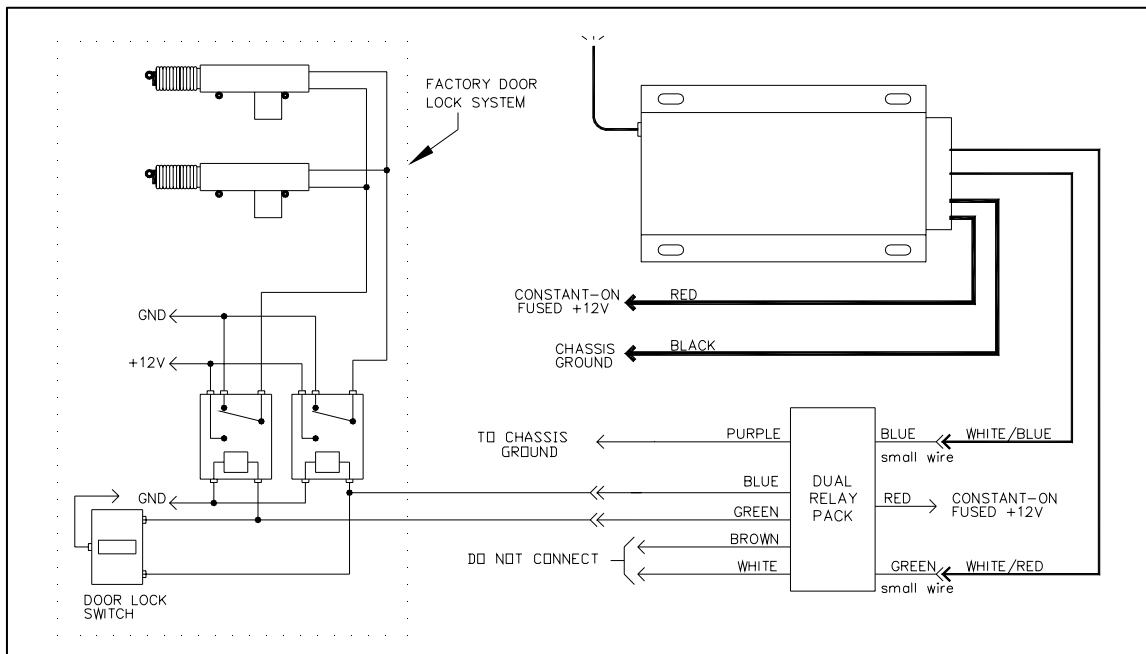


Figure 10. Connection to power door locks with 3-wire grounding switch.



# POWER DOOR LOCK WIRING

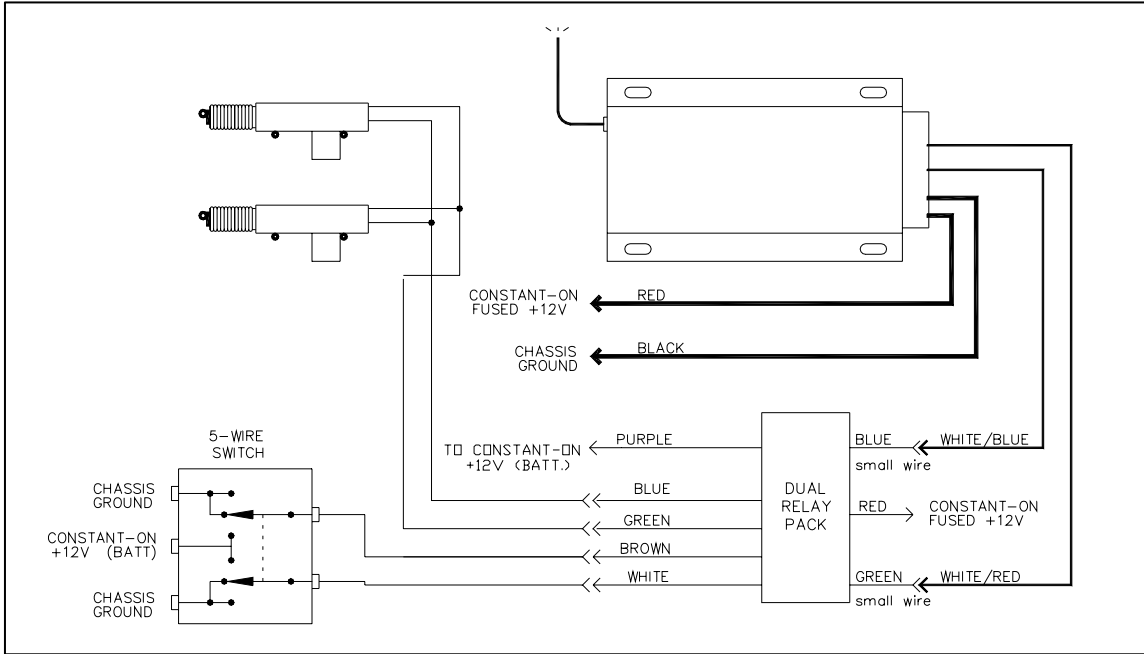


Figure 11. Connection to power door locks with a 5-wire switch.

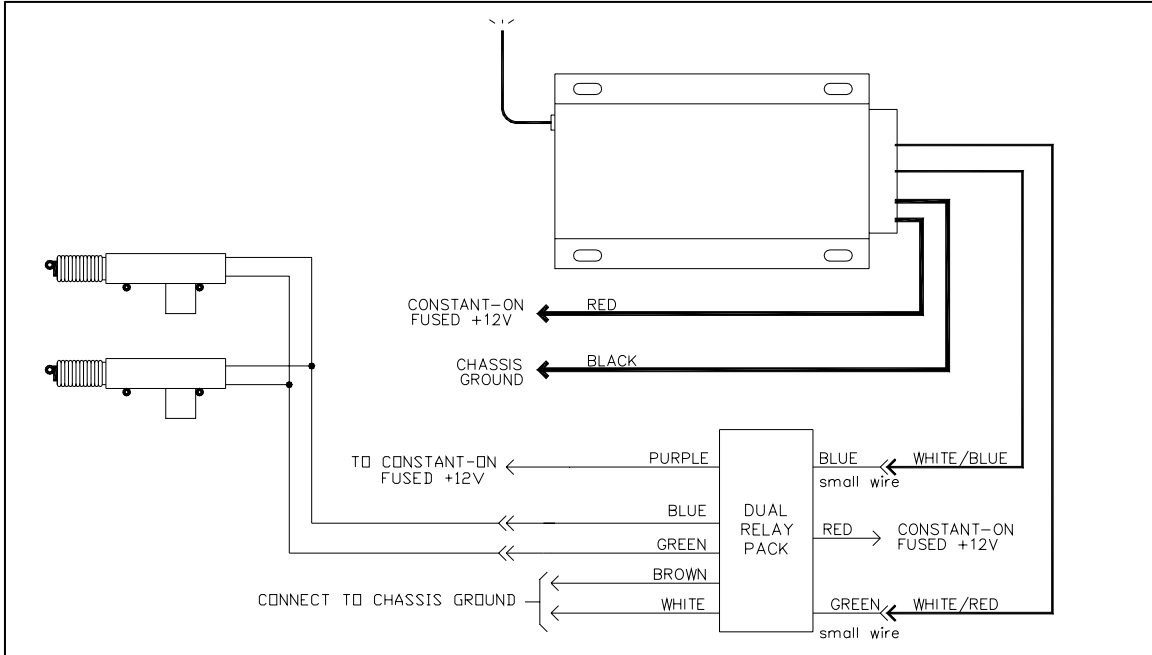


Figure 12. Connection to power door locks without any other switch.

## **OPERATION**

The key chain transmitter has four buttons labeled "I", "II", "III", and "IV" respectively. Button "I" controls the driver's window. The first time it is pressed it will roll the window down until the button is released. The next time it is pressed it will roll the driver's window up until it is released. Button "II" controls the passenger's window. It works the same as button "I", reversing the window direction each time it is pressed.

Button "III" releases the driver's door latch. It will send 12 volts to the actuator for up to one second. The relay is turned off automatically to prevent burning out the latch release actuator. Button "IV" releases the passenger's door latch. It will send 12 volts for approximately one second.

Pressing buttons "I" and "II" at the same time will activate the third internal relay for about one second, and can also activate an external relay for as long as they are held down. Pressing buttons "III" and "IV" at the same time will activate an external relay for as long as the buttons are held.

If a power trunk lift kit is installed in the vehicle or is being installed into the vehicle, the remote control system can raise and lower it. Pressing buttons "I" and "II" will activate the third internal relay for the trunk latch. After a slight delay, the relay to raise the trunk will be activated. This allows a trunk latch to be used along with the trunk lift motor for added security. Pressing buttons "III" and "IV" will activate the relay to lower the trunk.

When the ignition key is on, the only buttons that will work are "I" and "II". Buttons "III", "IV", "I-II", and "III-IV" are disabled. This safety feature will not allow the doors or trunk to accidentally release while the vehicle is in motion. This disables the key chain transmitter only. The emergency release switch will not be disabled.

## **BATTERY REPLACEMENT**

Should the transmitter function become weak or erratic, the battery in the key chain transmitter may be weak. An indication of a weak battery is that the red indicator may have a dim glow to it when any button is pressed. The battery is replaced in the following manner:

- A. Remove the small screw on the back of the transmitter case.
- B. Carefully separate the two case halves.
- C. Remove the battery, noting the (+) and (-) position.
- D. Replace the battery with a new 12 volt type GP23A battery which is available at most electronic stores (Radio Shack, etc.).
- E. Carefully replace the top cover and refasten the screw

## TROUBLE SHOOTING GUIDE

Symptom	Possible Problem	Solution
System will not operate doors or windows.	Receiver is not getting power.	Check 12 volt connection. Check ground connection. Check fuses.
Door latch actuators 'jump' or 'chatter'.	Weak or poor 12 volt connection. Transmitter signal is being disrupted. Door latch actuators are drawing too much current to be connected directly.	Check 12 volt connection. Move to new terminal point. Move antenna wire away from power wires. Wire a relay between the remote system and the actuator as shown in figure 3.
Windows change direction in mid-travel.	Over loaded 12 volt power circuit. Weak car battery. Transmitter signal is being disrupted.	Place receiver and windows on separate circuits. Check for loose connections. Increase wire size on power feed. Recharge or replace car battery. Move antenna away from power wires.
Windows work, but doors and trunk will not	Ignition key is on. Yellow wire has 12 volts at all times.	Turn off ignition key. Move yellow wire to a terminal that is powered only when the key is on.
Transmitter has very short range on all functions.	Receiver frequency is off. Transmitter battery is weak. Antenna wire needs repositioning	See FREQUENCY FINE TUNING. See BATTERY REPLACEMENT. Stretch wire out away from any wires that carry large currents.
Emergency release button will not work.	Switch not hooked up correctly.	Check ground connection. Check connection to wiring harness.

If none of these solutions solve the problem, or the problem occurring is not listed here, please call the Dakota Digital technical assistance line at (605) 332-6513 for further assistance.

### FREQUENCY FINE TUNING

Should the transmitter have very short range or not operate at all then fine tuning may be required. If the red indicator on the transmitter does not light or is dim then replace the battery.

To tune the receiver, perform the following:

- A. Remove the 4 screws on the top of the receiver case.
- B. Carefully separate the two case halves.
- C. Locate the small white frequency fine-tune adjustment trimmer on the circuit board inside the receiver. It will be located near the location where the antenna wire exits the case.
- D. Using a small non-metallic adjustment tool, turn the adjustment screw inside the blue trimmer 1/16 turn clockwise.
- E. Depress button III and check if the driver's door release's. If not, turn the adjustment screw an additional turn clockwise and recheck. After turning the screw a total 1/2 turn clockwise, return to its starting position and repeat the adjustment by turning it counter-clockwise in the same manner.
- F. Once the system releases the door, stop and re-close the case. If the adjustment fails to correct the problem, return the defective unit for servicing.

### INSTRUCTIONS FOR PROGRAMMING ADDITIONAL TRANSMITTERS

Placing receiver into programming/testing mode.

1. Unplug the main harness connector from the receiver unit.
2. Remove the receiver cover by taking out the four screws on top.
3. Locate the programming jumper pins labeled J1. They will be on the edge of the circuit board about 1/2 inch from the red programming light.

4. Short the programming pins together using a shorting jumper or small piece of wire.
5. Plug in the main harness connector so that the unit has power. The red programming light should come on and remain on.

Checking frequency adjustment.

1. Press button III. If programming light flashes, step 2 can be skipped.
2. Using non-metallic screwdriver, turn the white tuning adjustment in receiver unit until the light flashes rapidly.

Programming first transmitter.

1. Press button III. This will place the system in 'check' mode.
2. Press buttons II and III and the same time. The red light should flash 3 times and then remain on. The system is now in 'store' mode.
3. Press button I to store the transmitter code. The red light will flash twice to indicate the code has been stored. The system is now back in 'check' mode.
4. Press button I again. The red light should flash indicating the code was stored successfully.

Programming additional transmitters.

Follow instructions listed under 'Programming first transmitter' but press button II for 2nd transmitter or button IV for 3rd in steps 3 and 4.

Returning unit to normal operation.

1. Unplug the main harness connector.
2. Remove the shorting jumper from the programming pins.
3. Replace the aluminum cover and reconnect the main harness.

## **CMD-8000 COMMANDER SERIES REMOTE ENTRY SYSTEM LIMITED LIFETIME WARRANTY**

DAKOTA DIGITAL (the Company) warrants to the ORIGINAL PURCHASER of this remote control product that should any included control relays, electronic module, or transmitters under normal use and condition, be proven defective in material or workmanship DURING THE LIFETIME OF THE CAR IN WHICH IT WAS ORIGINALLY INSTALLED, such defect(s) will be repaired or replaced (at the Company's option) without charge for parts or labor directly related to repairs of the defect(s).

To obtain repair or replacement within the terms of this Warranty, the product is to be delivered with proof of warranty coverage (e.g. dated bill of sale), specification of defects, transportation prepaid, to the factory. This Warranty is valid for the original purchaser only and may not be transferred.

This warranty does not cover batteries, nor extend to damage to vehicle electrical system. This Warranty does not apply to any product or part thereof which in the opinion of the Company has been damaged through alteration, improper installation, mishandling, misuse, neglect, or accident.

This Warranty is in lieu of all other express warranties or liabilities. ANY IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, SHALL BE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. ANY ACTION FOR BREACH OF ANY WARRANTY HEREUNDER INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY MUST BE BROUGHT WITHIN A PERIOD OF 30 MONTHS FROM DATE OF ORIGINAL PURCHASE. IN NO CASE SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, WHATSOEVER. No person or representative is authorized to assume for the Company any liability other than expressed herein in connection with the sale of this product.

The Company does not warrant that this product cannot be compromised or circumvented. THE EXTENT OF THE COMPANY'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT PROVIDED ABOVE AND, IN NO EVENT, SHALL THE COMPANY'S LIABILITY EXCEED THE PURCHASE PRICE PAID BY THE PURCHASER FOR THE PRODUCT.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation if incidental or consequential damage so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

# ***Dakota Digital***

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