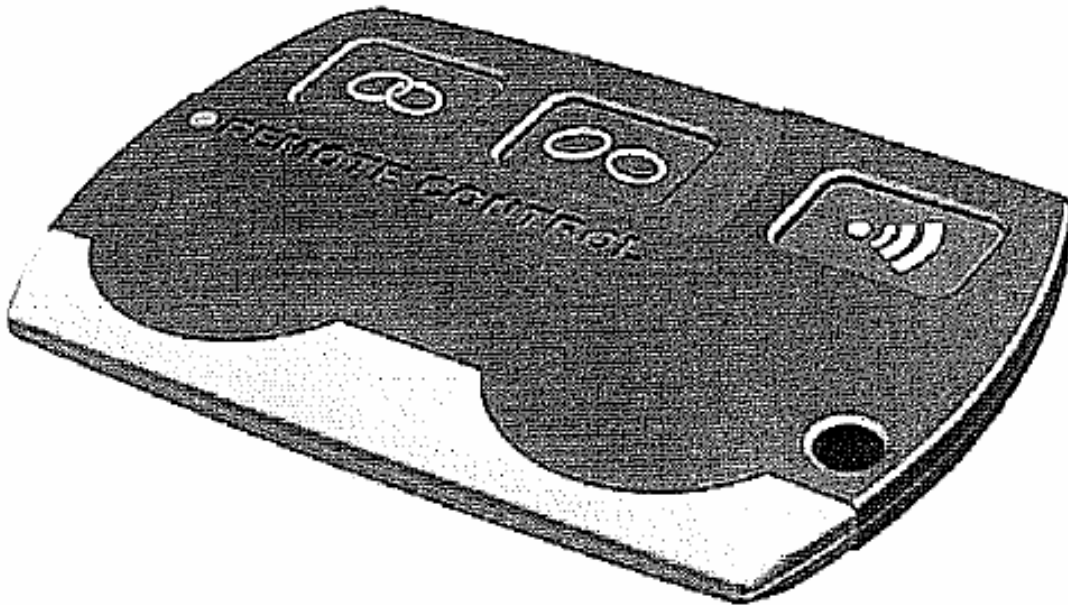


GENIE CARD

Operation and Installation Manual for Card Enabled Wireless Relay Product



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Chapter 1

Introduction

1.1 General

This manual is an installation and servicing guide for the Keyenabler Card Type DI-WICU Wireless Proximity Immobilizer System for vehicles.

1.2 Suitability

The system is designed for installation in vehicles having 12 volt batteries, negative chassis. An optional system for 24Volts is also available.

1.3 Interaction with Other Vehicle Systems

The system does not interfere with the operation of any other electrical or electronic system of the vehicle or existing protection or audio instruments.

1.4 Scope

The manual deals mainly with the following issues:

- Installation of the system
- Commissioning and tests for all possible situations

1.5 Service Needs and Levels of Maintenance

Service operations are needed mainly in two cases:

- When the system is first installed. The technician runs all test procedures and verifies that the system operates according to the established requirements.
- During operation period, as requested by the user, on system malfunction or total failure.

Important note for the installation technician

The installation of the relay in the vehicle should be hidden.

Take special care to conceal the wireless relay unit to make it look like a part of the vehicle's original electrical system.

Note

All maintenance operations described herein is on field level. It means that faulty units, once detected, are to be replaced by ones that operate properly. The units found to cause the problems are then shipped back to Keytroller for repairs. The service technician is not expected to attempt repairing modules in the field, mainly he needs to recheck that connections are correct.

1.6 Required Personnel Qualifications

- a. We recommend that the person who does the installation be a certified automotive electrician.
- b. The technician should have experience with servicing electronics equipment.

1.7 Tools for Installation and Servicing

Installation and servicing tools are those used by vehicle electricians: pliers of various types, wire cutters and strippers, and a digital multimeter.

Chapter 2

Theory of Operation for Model WICU

2.1 General

This chapter describes the Keyenabler Card system, Model WICU and its operation.

2.2 Components

The WICU comprises two parts:

The RFID card (transmitter). This is normally carried by the driver in a wallet etc. (Fig 2.1)

The wireless relay (receiver), installed in the vehicle to be protected. (Fig 2.2)



Figure 2-1.
The RFID Card (Transmitter)

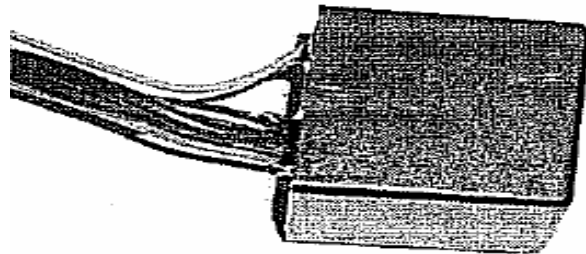


Figure 2.2
The Wireless Relay

The card is of one of two types:

- a. A unit that houses two batteries (Figure 2.3) – one in use and a spare one.
- b. A unit that contains a single battery and a vibration sensor (Figure 2.4). This is incorporated to prolong battery life by switching the card off when not in use. The sensor detects the absence of change in position longer than 2 minutes and automatically switches off the unit.

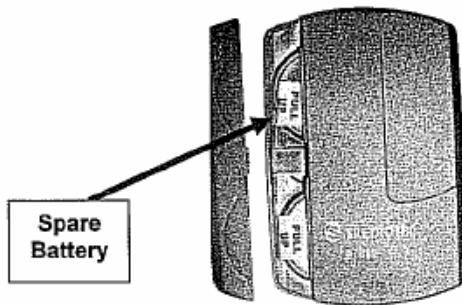


Figure 2.3. Card with Spare Battery

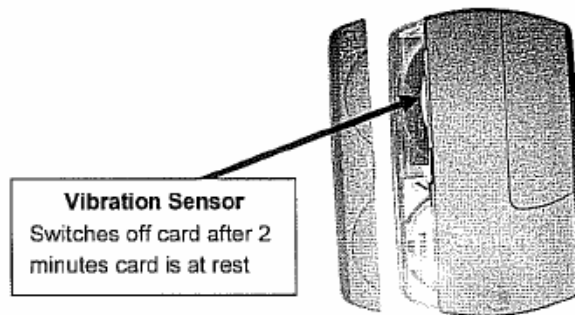


Figure 2.4. Card with Vibration Sensor

2.3 Features

- Arming and disarming of the system are fully automatic.
- Card of compact size enables carrying it in the wallet with credit cards.
- The number of WICUs carried simultaneously is not limited.
- Each WICU wireless relay unit can be controlled by up to four cards simultaneously.
- Arming and disarming of system take place automatically without any indication (such as flashing of LEDs etc.), although an LED is standard if you want to install it
- LED (For 12V and 24V systems) or buzzer (12V systems only) indication of blocked (immobilized) engine.
- Absence of card and faulty card indications.
- Emergency code for bypassing the system.
- The system arms (relay opens) after disconnection and re-connection.
- Capability of preparation of new cards and erasure of old ones (in case of lost, broken or otherwise useless card).
- Spare battery.

2.4 Activating the Card

The card is shipped in the “OFF” status. To enable the card, press any of the three pushbuttons.

2.5 Operation Modes

2.5.1 General. For the engine to be able to start and run normally, the transmitter in the card must be active. This is accomplished by pressing any pushbutton. This is usually not necessary since the card is active permanently. Under this condition the battery can last some four months (for the card with no vibration sensor).

The engine cannot be started unless the card is active and is within the reception range of the wireless relay unit in the vehicle (10 - 15 yards). Under normal driving situation, the card is within reception range of the wireless relay unit which picks up the transmitted signal. This allows the engine to run. When the driver gets away from the vehicle and leaves the engine running, the card may get out of reception range. The wireless relay

unit then reacts by opening the engine activation circuit after about a 30-second time delay. This stops engine operation. The engine cannot be restarted as long as the person carrying the card is out of the wireless relay unit reception range.

2.5.2 Normal use operation: The driver approaches the vehicle with the card carried by him/her (and the transmitter active). When he/she enters the vehicle's Keyenabler Card wireless relay unit reception range (between 10 – 15 yards), the wireless relay unit identifies the card and disarms and its relay closes. Starting the engine and driving are possible while the relay remains closed (the unit is disarmed). If the LED is installed it will be off.

2.5.3 End of travel: After the ignition switch is turned off, exit of the card from the wireless relay unit reception range, the system counts 30 seconds of no-signal pick-up and then arms (the relay in the wireless relay unit opens). At this point the LED will flash (if installed.)

2.5.4 Loss of received signal while vehicle is traveling

Signal transmission may stop during travel due, mainly, to two reasons:

- a. The card suddenly breaks down, e.g. if the driver inadvertently sits on the wallet thus damaging card.
- b. The battery gets exhausted.

When the signal is no longer picked up by the wireless relay unit, the system starts counting 30 seconds. If signal reception is resumed within this period, engine operation continues normally and the system “forgets” the occurrence.

However, if 30 seconds elapse and still no signal is received, the system enters a stand-by (“decision-making”) mode. This is a situation in which the system needs to decide whether or not to stop the engine:

Case a: Sudden disappearance of the signal. Loss of signal for 30 seconds will cause immediate stoppage of the engine.

Case b: Gradual weakening of the signal due to exhausted battery. This is sensed by the wireless relay. In this case, no stoppage of engine is initiated.

After the engine is switched off by turning the key, the engine is immobilized (as in the case when no signal is picked up) and the driver should replace the battery in the card or, alternatively, enter the emergency code (Section 2.7).

2.6 Alarms

2.6.1 Alarm devices: alarms are provided by an alarm device installed in the vehicle. This is either a buzzer (12V installations only) or an LED (light-emitting diode for both 12V and 24V systems).



Figure 2.5. Buzzer



Figure 2.6. LED

The alarm device is activated in any one of the following cases:

a. No transmitted signal is received . When the key is turned to start the engine, the buzzer emits four long bursts of sound and then starts buzzing fast (in case of a LED it lights four times for long periods, separated by short intervals, and then flashes quickly). These fast buzzes (or fast flashes) are audible (or visible) as long as the relay in the wireless relay is open and the key is turned. This serves also to alert the driver when the transmitter card is not present (or is not transmitting) to remind him/her that the engine cannot be started in the ordinary way.

In such a case the driver should switch on the transmitter in the card or enter the emergency code to be able to use the vehicle without the transmitted signal (see Section 2.7.)

b. The battery powering the transmitter in the card is weak , resulting in an impaired signal. This is sensed by the wireless relay unit in the vehicle. When the switch is turned off at the end of the travel, the buzzer emits 10 short sound bursts, or – in case a LED is installed - it emits 10 short flashes.

2.7 Emergency Code Operation

If the card is not operational for some reason, it is possible to bypass the Keyenabler Card system by entering a secret code by the turning the ignition switch on and off as the described in the following example. The buzzer emits short bursts of sound (or the LED flashes in short bursts of light) when the ignition switch is turned on, to notify the driver that no signal is picked up. These bursts of sound (or flashes) can be used to bypass the Keyenabler Card system. Each Keyenabler Card system is assigned a unique 4-digit emergency code which must be kept secret. The code is shown in the sticker applied to the wireless relay unit as in Figure 2.6.

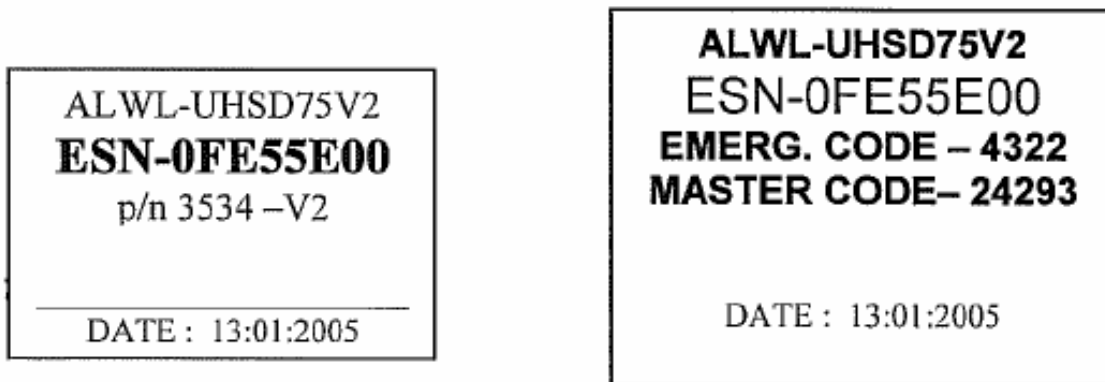


Figure 2.6. Code Sticker

The code can be used under such circumstances in order to enable vehicle operation as shown by the following example.

Example: say for example the code is **4322** as in the sticker. (Actual units will have different codes)

- a. The ignition switch must be off at the start. Turn on the ignition switch.
- b. Count **4** buzzes (or 4 flashes).
- c. Turn the ignition switch off.
- d. Turn on the ignition switch before the LED flashes again.
- e. Count **3** buzzes (or 3 flashes).
- f. Turn the ignition switch off.
- g. Turn on the ignition switch before the LED flashes again.
- h. Count **2** buzzes (or 2 flashes).
- i. Turn the ignition switch off.
- j. Turn on the ignition switch before the LED flashes again.
- k. Count **2** buzzes (or 2 flashes).
- l. Turn the ignition switch off.

If this procedure is carried out appropriately, the wireless relay disarms, the relay closes and enables free use of the vehicle as long as the ignition switch is ON. If the switch is off for thirty seconds or longer, the above procedure should be repeated.

If a mistake is made during the insertion of the code or time intervals longer than 2 seconds are allowed between digits, the buzzer/LED will emit sounds/produce flashes in quick succession as before, indicating failure to bypass the system. In such a case the procedure should be repeated.

If you have a fleet of vehicles you should keep a printed or electronic record of each vehicle's emergency code sequence in a safe place for future reference. You may want to give each driver a laminated card to keep in his wallet with his vehicle's emergency code and actuation procedure.

Multiple Cards

2.7.1 Number of cards in a system: The system can have up to four different cards at one time. It means that four different persons can operate the vehicle.

2.7.2 Requirements for preparation of new cards

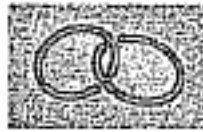
- a. Only Keyenabler RFID cards that are recognized by the system can be used.
- b. The operation of preparing a new card must be carried out within the reception range of the wireless relay.

2.7.3 Preparation (“teaching”) of a new card

- a. Take a card that is recognized by the wireless relay and a new card that is still not recognized (a “new” card).
- b. Enter the reception range of the vehicle (i.e. within a radius of 10 – 15 yards away from the wireless relay).
- c. Press both PANIC and LOCK buttons of the recognized card.



PANIC



LOCK

- d. Hold for 4 seconds until the LED on the card blinks fast.
- e. Let the LED blink for 1 – 2 seconds and release the buttons.
- f. Within 60 seconds after Step c, press both PANIC and LOCK buttons of the new card.
- g. Hold for 4 seconds until the LED of this card blinks fast.
- h. Hold for another 1 – 2 seconds and release the buttons. The new card is now recognized by the wireless relay unit.

2.7.3.1 Preparation (“teaching”) of a new card if a recognized card is not available

If a card that is recognized by the relay is not available, proceed as follows:

- a. Activate the new card by pressing any button on the card.
 - b. Disarm the relay using the secret pin code as described in 2.7 above. The relay enters the learning mode for new cards for 30 seconds.
 - c. Within 30 seconds, press both the PANIC and LOCK buttons on the new card until the LED on the card flashes rapidly.
- The new card should now be learnt by the relay.

2.7.4 Temporary de-activation (“putting-to-sleep”): De-activation –(disabling) may be needed to save the battery in a card that is not going to be used in the near future (this operation is necessary since there are no “ON” and “OFF” pushbuttons).

To disable a card:

- a. On the card, press both the PANIC pushbutton and the LOCK pushbutton briefly. The card should now be inactive. If the card remains active, press PANIC and LOCK again.

To re-activate a card:

Press any of the three pushbuttons.

Chapter 3

Installation

3.1 General

This chapter provides information for the installation of the Keyenabler Card Model WICU system.

3.2 Preparations for Installation

- a. Prior to installation, collect and check the data of the specific vehicle where the wireless relay is to be installed.
- b. Find the wire that should be cut. This should be typically the wire that carries the ignition voltage from the vehicle's keyswitch. Alternatively it can be installed in the starter or fuel pump circuit.
- c. Cut this wire and connect one end of the cut wire to the heavy gauge black wire designated by 01 of the wireless relay, and the other end – to the heavy gauge black wire designated 02 (it does not matter which end you connect to 01 and which – to 02). Fold back and tape up the heavy black wire number 3.

The connection diagram for 12V systems is shown in Figure 3.1 below.

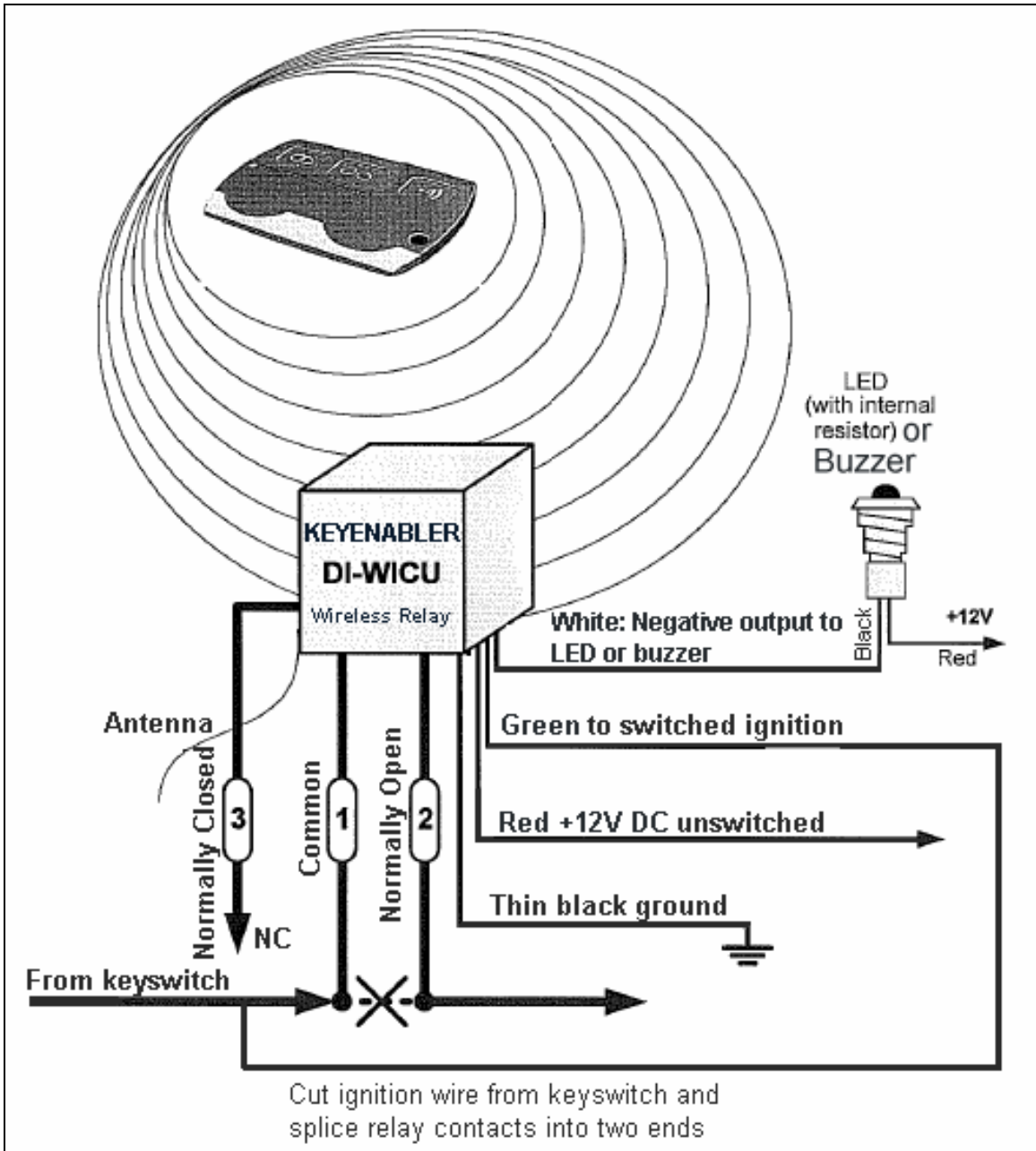


Figure 3.1. Installation Schematic for 12V Vehicles

The connection diagram for 24V systems is shown in Figure 3.2 below.

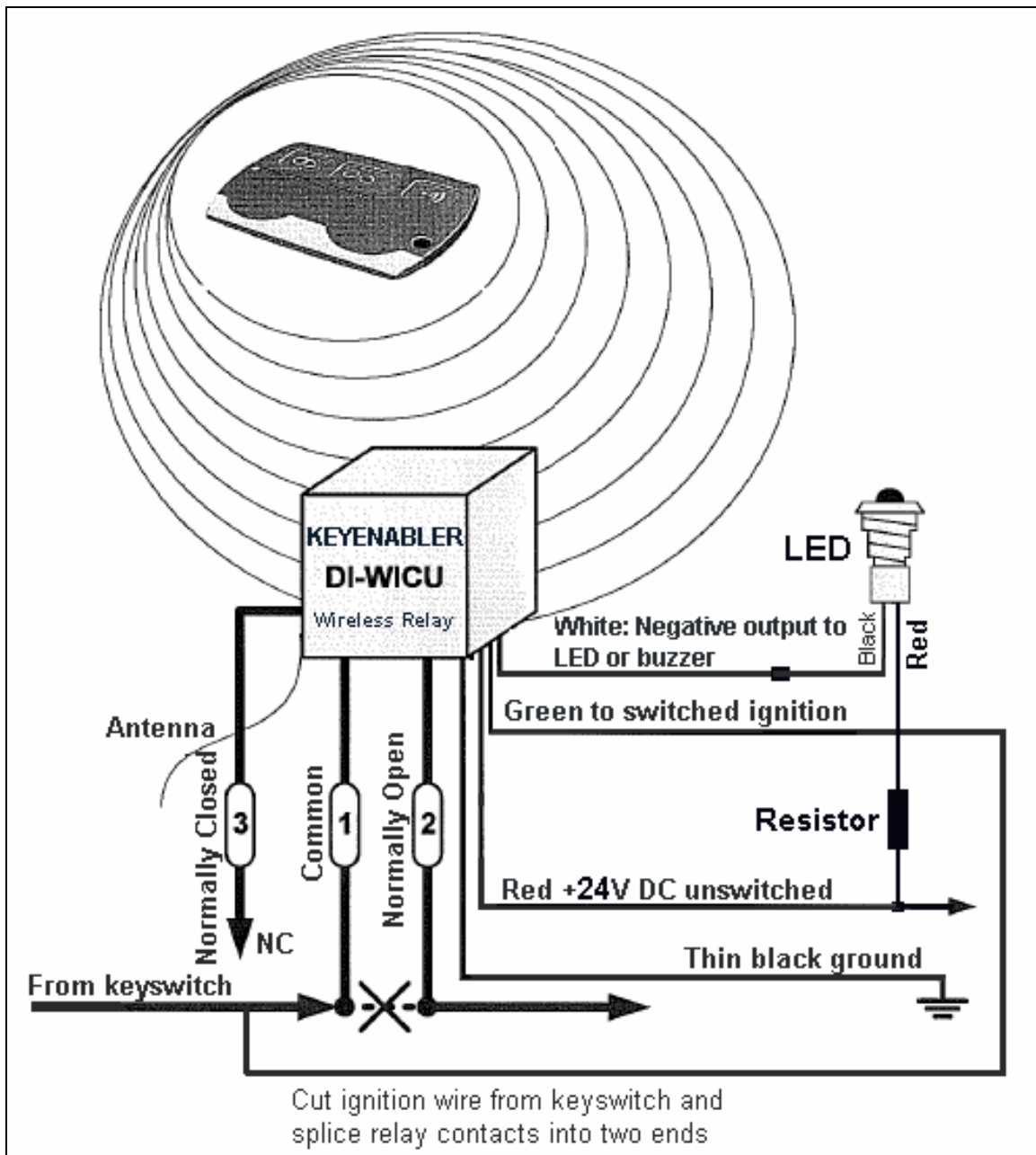


Figure 3.2 Installation Schematic for 24V Vehicles

Note that on 24V systems there is an external resistor in the red wire to the LED that will be fitted by Keytroller. Leave this resistor in place if fitted.

3.3 Installation

a. The wireless relay: as noted elsewhere, the wireless relay should be installed in such a way that it will look like a part of the vehicle electrical system without attracting special attention. If the relay or its connections are immediately visible upon removal of the underdash panel, they can easily be bypassed. Always make sure the relay and its

connections are difficult to discern from the factory wiring! Exposed butt connectors do not look like factory parts, and will not fool anyone! For this reason, routing the wireless relay wires away from the steering column is recommended.

b. Indication device: this is a LED (for 12V and 24V systems or a buzzer (12V systems only.)

- The LED can be mounted on a convenient place on the dashboard or near the transmission (“gearbox”) lever. It should be visible to the driver.
- The buzzer (alternative to LED on 12V systems) – in most cases the buzzer will be mounted behind the dashboard.

3.3.1 Connecting your wires

Now that you have decided where each component will be located, you’re going to find the wires in the vehicle that the security system will be connected to.

IMPORTANT! Do not use a 12V test light to find these wires! All testing described in this manual is described using a digital multimeter.

3.3.2 Obtaining constant 12V or 24V

We recommend two possible sources for 12V or 24V constant supply: The (+) terminal of the battery, or the constant supply to the ignition switch. Always install a 1 Amp fuse within 12 inches of this connection.

3.3.3 Finding the switched ignition wire

The switched ignition wire is powered when the key is in the run or start position. This is because the ignition wire powers the ignition system (spark plugs, coil) as well as the fuel delivery system (fuel pump, fuel injection computer). Accessory wires, on the other hand, lose power when the key is in the start position to make more current available to the starter motor. Use the following procedure to find constant power(+12V or 24V) with your multimeter.

1. Set to DCV or DC voltage.
2. Attach the (-) probe of the meter to chassis ground.
3. Probe the wire you suspect of being the ignition wire.

The steering column harness or ignition switch harness is an excellent place to find this wire.

4. Turn the ignition key switch to the run position. If your meter reads +12V or +24V, go to the next step. If it doesn’t, probe another wire.
5. Now turn the key to the start position. The meter display should stay steady, not dropping by more than a few volts. If it drops close to or all the way to zero, go back to step 3. If it stays steady, you have found an ignition wire.

3.4 Tests after Installation

After installation is complete, the operation of the system must be checked by creating or simulating the various conditions:

- a. Initial immobilization (when vehicle is not in use) and continued operation in case of card breakdown.
- b. Enabling of engine operation under normal vehicle operating condition and bypassing the system with the emergency code.

3.4.1 Normal operation: With the card switched on and within reception range, start the engine and let it run for several minutes. No problem should be observed.

3.4.2 Initial immobilization and system bypassing by code

- a. With the card operating and within reception range of the vehicle or inside the vehicle, start the engine several times and verify that the starting – as well as the operation of the engine – is normal.
- b. Switch off the engine.
- c. Take the card out of the wireless relay unit reception range.
- d. Wait for one minute.
- e. Try to start the engine. **The engine must not start.**
- f. When you turn the switch on, the LED should flash fast (or the buzzer should emit sounds) to indicate the absence of a picked-up signal.
- g. Repeat this test several times.
- h. Turn off the switch and wait for 15 seconds.
- i. Insert the emergency code as shown by the example in Section 2.7.
- j. Try to start the engine. **This time the engine should start.**

4.0 Operating the Keyenabler wireless relay on a desktop in order to demo or program the system.

The Keyenabler system can be operated on the desktop provided it is connected as in figure 3.1 or 3.2 as appropriate:

- The three thick black wires numbered 1, 2 and 3 are left unconnected.
- You will need a 12V DC or 24V power source as appropriate, such as a wall mounted power supply.
- Connect the thin black and purple wires to the 12V or 24V negative line.
- Connect the red and green wires to the 12V or 24V positive line
- Connect the white wire to the LED or buzzer negative line (black wire)
- Connect the LED or buzzer positive wire (red) to the 12V positive line
- Turn on the power.

You can now simulate the system's operation. Note: If the wireless relay is disabled (relay contacts are open), the LED will flash or the buzzer will beep. If an activated card is within the reception range of the wireless relay, the relay will be enabled (closed) and the LED or buzzer will be off.

With this setup the unit can be demonstrated, tested and cards can be programmed so that the wireless relay will recognize them.

Specifications

Technical characteristics – wireless relay

Operating voltage range 10 – 16 volts DC (Optional 24V is available.)

Operating current, standby Less than 10mA
Operating current when active 45 mA
Operating relay contact current 20 A
Maximum relay contact current, peak 30 A
Operating temperature range - 40°F to 185°F
(-40°C to 85°C)
