



# CARGUARD

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## FINGERPRINT TERMINAL INSTALLATION GUIDE



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VERSION 1.02

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## Safety Precautions

| <b>Caution</b>  |  |
|---|--|
|  | Keep the fingerprint contact area clear and uncontaminated by dirty hands or damaged by foreign objects or materials.<br>Failure to do so may affect fingerprint recognition performance or cause malfunction. |
|  | Do not forcibly press the buttons of the product.<br><br>Avoid any contact with any sharp objects to the device.   |
|  | Do not clean the device with any form of liquid other than isopropyl alcohol; use only a soft, lint-free damp cloth.   |

# 1 Overview

## **Convenient, safe vehicle security system for private car owners and fleet operators**

CarGuard™ is a highly secure and easy-to-use system that effectively prevents vehicle and freight theft using highly accurate biometric technology. The system is designed for maximum convenience and quick installation in any private or commercial vehicle.

CarGuard™ seamlessly integrates with telematic solutions, GSM and other tracking systems, as required by fleet operators and providers of wireless vehicle tracking solutions.

### Key Benefits

- Simplicity of operation and user-friendliness
- Easy and fast installation in any private or commercial vehicle
- Robust security using BioGuard's cutting-edge fingerprint identification technology
- Seamless integration with telematic solutions, GSM and other tracking systems

### **Using Biometrics to Prevent Vehicle and Freight Theft**

Designed to grant use privileges for authorized drivers/users, CarGuard™ positively identifies the driver using BioGuard's cutting-edge fingerprint identification technology. The driver's fingerprint is verified using the system's high-speed, one to many matching algorithm. If the driver is not enrolled in the system (e.g., a thief), CarGuard™ prevents ignition of the engine.

### **Enhancing Fleet Management and Wireless Vehicle Tracking Solutions**

Vehicle and freight theft represent a major business cost for companies operating mobile fleets (e.g., enterprise fleets, busses, trucks/vans, car rental/leasing fleets, construction and agricultural vehicles, armored cars). In addition to eliminating the direct costs, CarGuard™ helps fleet operators reduce operating costs.

## 2 Physical Description

### 2.1 Product Content

The CarGuard system contains:

- **Fingerprint Terminal**



- **Power unit and Connecting Cables**



- **Immobilizer**



- **Product CD including Installation Guide and Users Manual**



## 2.2 Immobilizer

BioGuard's immobilizer kit contains the immobilizer itself, the connecting cables and a rubber, cable sleeve.



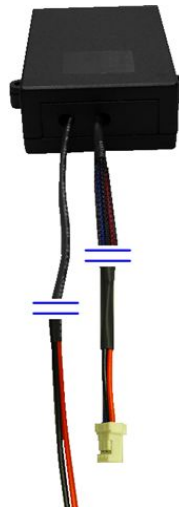
## 2.3 Power Supply

The Power supply inputs 9 - 24 VDC from the car battery and outputs 3.3 VDC and 9 VDC to the fingerprint terminal.

The input cable is a 100 cm long, two-wire cable. The positive wire is connected to the car battery through a 10A protective fuse.

The output cable is a 60 cm long, 3-wire cable terminated by a 3-pin connector, 9VDC, 3.3VDC and GND.

The connector should be attached to the opposite connector on the fingerprint terminal unit.



## 3 Installation Procedures

**To install the CarGuard system:**

1. Install the fingerprint terminal
2. Install the power unit
3. Install the Immobilizer
4. Interconnect all the devices

### 3.1 Installing the Immobilizer

**To install the immobilizer:**

1. Select a suitable hidden location for the Immobilizer device (for example behind the dashboard).
2. Insert the Immobilizer wires into the sleeve.
3. Connect all Immobilizer wires to their corresponding wires inside the vehicle according to the Table in section 3.4.
4. Attach the Immobilizer to the vehicle in the pre-selected hidden location.
5. Connect the plug end of the Immobilizer wires into the immobilizer and fasten the rubber sleeve.

**Note: Avoid closing the dashboard until the installation is finished and tested**

### 3.2 Installing the Power Unit

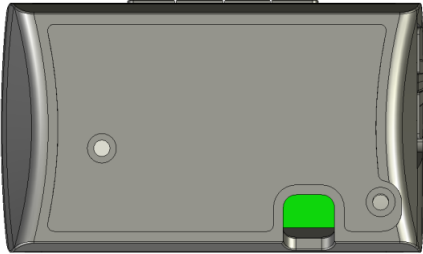
**To install the power unit:**

1. Install the power unit under the dashboard or in any suitable place hidden from view.
2. Connect the red (positive) wire of the 2-wire input cable to the vehicle battery via a 10A protective fuse. Connect the black wire to the vehicle chassis (GND).
3. Attach the connector of the 3-wire output cable to the fingerprint cable connector.



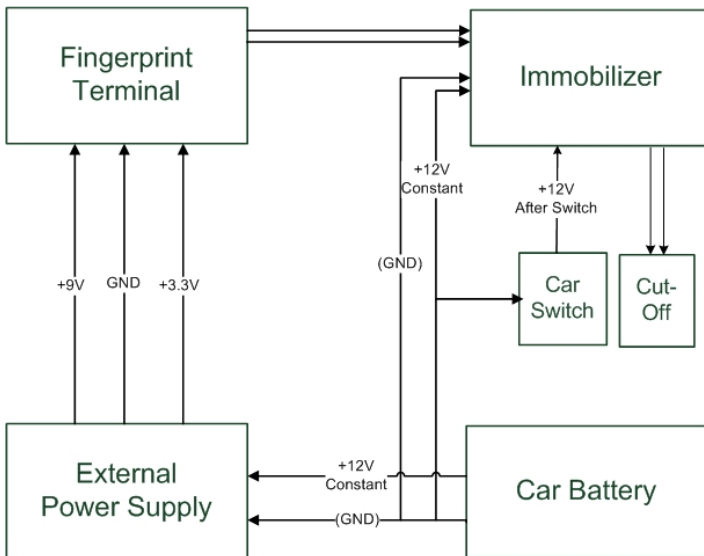
### 3.3 Installing the Fingerprint Terminal

The cable interface and the adhesive strip used to secure the device to a suitable surface is located on the rear panel of the fingerprint terminal.



### 3.4 Interconnecting the Devices

After installation of the immobilizer, fingerprint terminal and the external power supply, interconnect the devices as illustrated below.



Plug the cable terminator end of the fingerprint terminal into the cable terminator end of the power unit (male and female connectors).

The Immobilizer cable pin-out is given below. Connect the cable wires as listed in the Table.

| BioGuard ISR Stopper Connector (Immobilizer) |       |   |            |
|--|-------|---|------------|
| Pin No.                                      | Color | Function  | Wire Label |
| 1  | Red   | 12V+ or 24V+ Input  |            |
| 2  | Black | Normally Closed - In (Not Used)                                   | NC 106     |
| 3  | Black | Normally Closed - Out (Not Used)                                  | NC 106     |
| 4  | White | Data wire (Connection to white wire of the finger print terminal) |            |
| 5  | Black | GND Earth<br>(Connection to Car Chassis)                          | GND        |
| 6  | Black | GND Earth<br>(Connection to finger print terminal)                | GND        |
| 7  | Black | Normally Open - In<br>(Connection to Ignition Cutoff)             | NO 107     |
| 8  | Black | Normally Open - Out<br>(Connection to Ignition Cutoff)            | NO 107     |
| 9  | Blue  | IGN-SW<br>(Connection to Car Switch)                              |            |
| 10   | Black | Not Used  | D_Cut      |

### 3.5 Powering up the Unit

After installation is completed and all the wires are connected, insert the 10A fuse in its place to power up the unit. The blue power indicator on the fingerprint terminal lights up confirming power up.

All the LEDs blink once and a buzzer sounds. The digital display shows 00 which is the number of users stored on the device database.

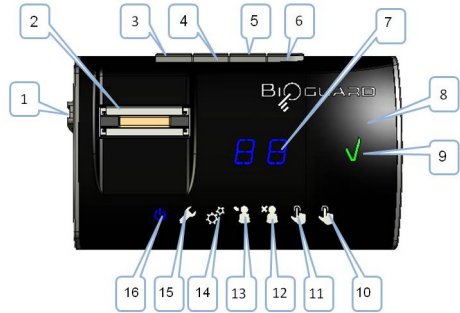
The first time a device is used the Slide Administrator LED is remains lit to indicate that the Administrator's fingerprint is needed prior to using the device.

# 4 User Registrations

## 4.1 Front Panel Description

The device front panel is the interface between the user and the fingerprint system.

The callout numbers in the illustration refer to the sequence numbers in the following table.



| No. | Icon   | Colour     | Description  |
|-----|--------|------------|--|
| 1   | Button |            | <b>Slide switch:</b><br><b>Downward:</b> Enroll or Normal operation;<br><b>Upward:</b> Delete a user |
| 2   |        |            | <b>Sensor</b>  |
| 3   | Button |            | <b>Program Button</b><br>Enroll, Delete, and Enter programming mode                                  |
| 4   | Button |            | <b>Scroll Up</b><br>Used mainly in Program mode  |
| 5   | Button |            | <b>Scroll Down</b><br>Used mainly in Program mode  |
| 6   | Button |            | <b>Enter</b><br>Press to confirm an operation  |
| 7   |        | Blue       | <b>Digital Display</b>   |
| 8   |        | Red        | <b>Fail indicator</b>  |
| 9   |        | Green      | <b>Acknowledge indicator</b>   |
| 10  |        | Blue       | <b>Slide Administrator indicator</b>   |
| 11  |        | Blue       | <b>Slide User indicator</b>  |
| 12  |        | Red        | <b>Delete operation indicator</b>  |
| 13  |        | Orange/Red | <b>Enroll operation indicator</b>  |
| 14  |        | Orange/Red | <b>Program Mode indicator</b>  |
| 15  |        | Orange/Red | <b>Service Mode indicator</b>  |
| 16  |        | Blue       | <b>Power indicator</b>   |

## 4.2 Enrolling the First Administrator

To perform installation tests to verify that the device is operational, the initial user (Administrator) must be enrolled.

### To Enroll the Administrator

1. Move the slide switch downward to **Enroll** mode.
2. Press and release the **Program** button. The **Enroll** and **Slide Administrator** LED indicators light up.
3. Slide the designated finger over the sensor, three times at maximum intervals of 12 seconds.

Each successful swipe on the sensor will increase the digital display by one digit.

When the process is complete:

- The display will blink to show 00 which is the index number of the administrator in the fingerprint terminal database.
- The green acknowledge indicator lights up.
- The system returns to idle mode and the display shuts down.

**Note:** If enrollment is unsuccessful, repeat this process.

## 4.3 Testing and Calibration

After installation, system testing is required to ensure optimum configuration and calibration if needed.

The fingerprint terminal should be programmed to suit the best needs of the customer.

## 4.4 Program Mode Operation

### To enter the program mode:

1. Press and hold the **Program** button for 5 seconds until the buzzer sounds. The **Program** LED blinks slowly and the slide “**Admin**” LED lights up indicating that Administrator confirmation is required.
2. The Administrator slides his finger over the sensor once, to confirm programming mode. The first programming menu of 00 is displayed.
3. Use the **Scroll Up** and **Scroll Down** buttons to select the required menu option, and press **Enter** to confirm your menu selection.

## 4.5 Device Configuration

Program mode operation enables change of the configuration and the behavior of the fingerprint terminal as detailed below.

| #  | Description                              | Function   |
|----|--|--|
| 00 | Enters service mode                      | Enables sending the pre-programmed neutralize code (menu 09)   |
| 01 | Disable service activation option        | The user can no longer activate the service mode   |
| 02 | Enable service activation option         | The user can now activate the service mode ("Program" menu 00)   |
| 03 | Pulse length                             | Sets the hook-up time elapse to send the neutralize code<br>Default configuration is 5 sec   |
| 04 | Pulse type                               | Set the signal method to neutralize the immobilizer (method 5 is set by default)   |
| 05 | Program mode permission authorization    | Enables all registered users on the device to enter program mode   |
| 06 | Disable Program mode permission          | Revokes all users' permission to enter the device programming mode (only the Administrator is now allowed to enter the Programming mode) |
| 07 | Administrator privileges assign/unassign | Administrator user can assign more administrator users to the device or remove administrator privileges from the device                  |
| 08 | Device initialization                    | Erase all templates from the device  |
| 09 | Define neutralize code                   | Enter/Change the service mode neutralize code  |


## 4.6 System Reset

Only the administrator can reset the system.

### To initialize (reset) the system:

1. Press and hold the **Program** button for 5 seconds until the buzzer sounds.

The **Program Mode**  LED blinks slowly and the **Slide**

**Administrator**  LED lights up indicating that administrator confirmation is required.

2. The Administrator slides his finger over the sensor once, to confirm the system entrance to programming mode.  
The first programming menu of 00 is displayed.
3. Use the **Scroll Up** button to select the initializing menu option, (menu number 8) and press **Enter** to confirm.
4. The Administrator slides his finger over the sensor to complete the initialization process.

**Note: System reset erases all fingerprint templates from the device database, but does not affect the configuration changes.**

## 5 Troubleshooting

The following troubleshooting table lists potential problems with their possible causes and their possible solutions.

| Trouble         | Symptom   | Action/Remedy   |
|-----------------|---|---|
| Power           | The blue power indicator does not light up.   | Check the power unit, cables, connections and fuse.   |
| Enrollment      | The digital display does not increment during fingerprint scanning and the green acknowledge indicator does not light up. | Check the following: <ul style="list-style-type: none"> <li>▪ Slide switch is "down"? If not "push" it down.</li> <li>▪ The device is in enrolling mode.</li> <li>▪ Admin was recognized before trying to enroll any user.</li> <li>▪ Clean the surface of the sensor and try again.</li> </ul> |
| Fingerprint     | The fingerprint has been enrolled but is not acknowledged.  | <ul style="list-style-type: none"> <li>▪ Make sure that the correct registered finger is swiped.</li> <li>▪ Make sure that the swipe is in the correct direction and angle.</li> <li>▪ Wipe the finger dry</li> <li>▪ Lightly clean the sensor with a dry cloth.</li> </ul>                     |
| Lock Controller | Finger was recognized correctly but the ignition fails.   | <ul style="list-style-type: none"> <li>▪ Check the immobilizer power connection.</li> <li>▪ Check the cut-off wires connection.</li> </ul>  |



## 6 Specifications

**Table 1: CarGuard Device Specification**

| Specification            | Description   |
|--------------------------|---|
| Supply voltage Output    | Power Supply unit between the Car battery and fingerprint reader  |
| Power consumption        | Approximately 300mA   |
| Interface                | Stand alone device<br>Optional Serial communication or GSM device |
| Image resolution         | 508 DPI   |
| Grayscale image depth    | 8-bit (256 levels)  |
| Protective coating       | 10 million swipes   |
| FAR                      | $FAR = 10^{-6}$   |
| FRR                      | $FAR = 10^{-4}$   |
| Signal output            | Transmission signal to neutralize the immobilizer                 |
| Operating temperature    | -10° to 60°C  |
| Storage Temperature      | -20° to 70° C   |
| Physical Dimensions      |   |
| Weight                   | Approx 50g  |
| Outer dimensions (L,W,D) | 64.8mm x 37.9mm x 16.5mm  |

