



# LASER DEFENSE SYSTEM

By **ESCORT**

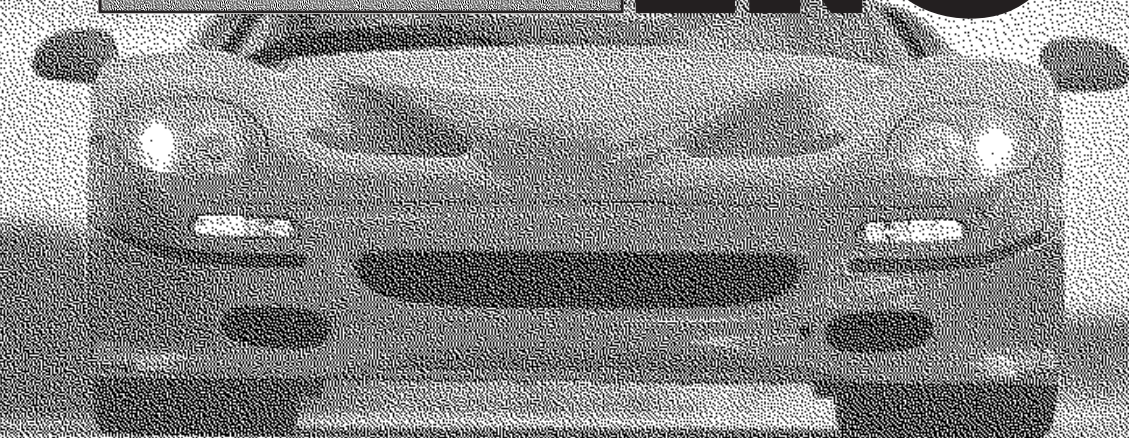
SHIFTER ZR3 is designed in the USA by

Escort Inc.  
5440 West Chester Road  
West Chester, Ohio 45069

Sales/Service 800-964-3143  
Fax 513-870-8509  
[www.escortradar.com](http://www.escortradar.com)

©2002 Escort Inc. Escort®, Passport®, and Laser Shifter™ are trademarks of Escort Inc.  
Features, specifications and prices subject to change without notice.

# SHIFTER 3<sup>TM</sup> ZR3



By **ESCORT**

LASER SHIFTING TECHNOLOGY / PROFESSIONAL INSTALLATION REQUIRED

# LASER DEFENSE SYSTEM

Owner's Manual

## Congratulations

Your new Shifter ZR3 is the most advanced defense system against targeting laser guns. The Shifter ZR3 includes (2) front-mounted and (1) rear license plate mounted laser transceivers, interface module, display controller with audible and visual alerts, and a remote mute button.

In addition, your new Shifter ZR3 introduces a new level of Laser defense including:

- Visual indicators for front and rear signals
- Volume adjustment
- Self-test diagnostics mode with error indication
- Standard remote mute button provides one-touch mute and manual “receive only” mode.
- High-Speed A/D converter dramatically improves laser detection range

Please read the manual in detail to get the most out of your new Shifter’s performance and features.

Please drive safely.

## PLEASE NOTE:

This product may be limited or prohibited in some jurisdictions. Check applicable laws before using.

## IMPORTANT INSTALLATION WARNING:

The Shifter ZR3 requires professional installation. New car dealers, and a select group of car audio specialists can install the Shifter ZR3 for you. Call us toll-free at 1-800-964-3143, or visit our website at [www.escortradar.com](http://www.escortradar.com) for an authorized dealer near you.

Attempting to install the Shifter ZR3 without expertise in automotive electronic installations can cause personal injury during the installation, or can damage your Shifter or your vehicle. If your vehicle is damaged during installation, its safety systems may be compromised, which could cause personal injury or property damage.

<b>Introduction</b>		<b>Technical Details</b>	<b>6-7</b>
• Congratulations	1	• Specifications	6
• Important Warning	1	• How Laser Works	7
• Quick Reference Guide	2	<b>Service</b>	<b>8-9</b>
<b>Controls and Features</b>	<b>3-5</b>	• Troubleshooting	8
• Laser Transceivers	3	• Service	9
• Power and Volume Control	3	• Accessories	9
• Power-on Indication	3	• Warranty	9
• Mute/Remote Mute Button	3		
• Receive Only Mode	3		
• Display Brightness	4		
• Alerts	4		
• Diagnostics/Error Indications	4		
• Optional Passport 8500 Configuration	5		

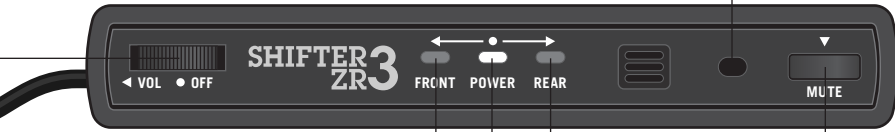
## Quick Reference Guide

### Power/Volume Control

Rotate the thumbwheel to turn the Shifter on and set the volume. (We recommend wiring the Shifter to a switched circuit so that it will turn on/off with your vehicle's ignition).

### Automatic Brightness Control

A built-in photocell will adjust the display brightness automatically based on the ambient light in the vehicle.



### Front Signal Indication

Flashing LED (red) provides visual alert for incoming laser signals received from the front of the vehicle.

### Power On Indication

Single LED (green) provides power-on and self-diagnostics indication.

### Mute Button

Briefly press this button on the display controller, or the standard remote mute button, to silence the audio for a specific alert. (The audio will alert you to the next encounter.) Press the mute button twice during an alert for manual "receive only" mode.

### Rear Signal Indication

Flashing LED (red) provides visual alert for incoming laser signals received from the rear of the vehicle.

## Controls and Features

### Laser Transceivers

Your Shifter ZR3 is equipped with a total of three (2 front, 1 rear) laser transceivers. These highly sensitive laser transceivers will detect a laser signal, and respond (or transmit) a pulsed signal back in order to "Shift" or confuse the targeting laser gun.

These highly sensitive transceivers must have a clear view of the road, and must be installed parallel to the road and aimed correctly in order to work properly. See Installation Manual for complete details.

### Power and Volume Control

To turn the Shifter on and adjust the alert tone volume level, rotate the thumbwheel on Shifter's Display/Controller. Turn the volume control knob to the left to increase the audio volume. When you turn the Shifter on, it will go through a sequence of alerts and verify communication to the laser transceivers.

### Power-On Indication

After the Shifter's start-up sequence is complete, the pilot LED (green) will stop flashing, informing you that the system is turned on and functioning properly.

### Mute/Remote Mute Button

The Mute Button, located on Shifter's front panel, or the installed Remote Mute Button, allows you to silence the audio alert during a laser encounter.

To mute the audio, briefly press the Mute Button or the installed Remote Mute Button once. After that laser encounter has passed, the mute will automatically reset and the audio will alert you to the next encounter.



### Manual "Receive Only" Mode

The Remote Mute button can also be used to manually shut off the laser transceivers once you have corrected your speed. Since some laser guns provide "jamming" codes for the officer, this can be useful to avoid any undue attention.

Simply press the installed Remote Mute Button, or the mute button located on the Display Controller twice during a laser alert. All Shifters will cease to transmit, and the alert LED will stop flashing and remain on. This indicates that you are now in "receive only" mode.

The Shifters remain in the "receive only" mode for approximately sixty seconds, giving you time to pass the speed trap. Once this time has expired, the alert LED will turn off, and a double beep tone will be given, indicating that the Shifters are now back in the "active" mode.

### Display Brightness

Shifter's display brightness is automatically adjusted to suit ambient lighting conditions in your car. (The light sensor is located to the left of the Mute button on the Display Controller and may dim the display momentarily when accessing this button.)

### Alert Indications – Audible

Since Laser signals are a possible threat no matter how weak, the Shifter ZR3 alerts you with a full continuous laser alert.

### Alert Indications – Visual

Separate front and rear alert lamps (red LED's) provide visual indication for incoming signals.

Once a laser signal is received, the appropriate alert lamp (red LED) will begin to flash, indicating that a laser signal has been received, and that the Shifters are transmitting back.

If the manual shut off feature is engaged, the alert lamp (red LED) will switch to a solid "on" state, and will remain on until the sixty second timer has elapsed (see page 3 for more details).

### Diagnostics

Your Shifter ZR3 comes complete with built-in self-diagnostic circuitry, and error indications.

During the start-up sequence, the Shifter display will make certain that all

components are connected and communicating properly.

On initial start-up, the power-on indicator (green LED) will blink. During this time communications between the front Shifters, Interface, and rear Shifter are tested. Finally, the Interface and Display communications are tested. If everything is working correctly, a double beep tone is given, and the power-on indicator will stop flashing and remain "on."

### Error Indications

The ZR3 will test each element of the system during the start-up sequence. If communications stop (i.e. cable is disconnected) an error message is given.

#### Front Shifter Error

If one, or both of the front-mounted "Shifters" is not communicating properly, the front LED on the display controller will remain on, and a double brap tone will be heard. This sequence will continue until the unit is turned off, indicating that service is required.

#### Rear Shifter Error

The ZR3 can be installed without the rear laser "Shifter."

If the rear "Shifter" stops communicating, or is not installed, the rear LED on the display controller will remain on approximately 5-10 seconds during start-up, and a double brap tone is given. Once this

sequence is complete, the rear LED on the display controller will turn off.

### Passport 8500 Configuration

The new Laser Shifter ZR3 laser defense system can be integrated, or "linked" to the Passport 8500 radar and laser detector using the optional ZR3 "link" cable, creating the ultimate protection against radar and laser guns. Contact your local installer for details.

When the ZR3 Laser Shifter is linked to the Passport 8500, all visual and audible alerts are generated through the Passport 8500, eliminating the use of the supplied display controller.

### Start-Up Sequence

Once the ZR3 has been successfully installed, the Passport 8500 will provide confirmation of this by displaying a "Zr3 Shft" (factory default), "Zr3 Off," or "Zr3 Rec" message during its start-up sequence.

If both the 8500 and the Shifter Display Controller are connected at the same time, both will go through a self-test. Once the self-test is complete, the Display Controller will go to "sleep," relying on the Passport 8500 to display any visual information.

If the Shifter Display Controller is connected, and the Passport 8500 is disconnected or turned off, the Shifter Display Controller will wake-up, and provide all visual indications from the Shifter ZR3.

### How to change the ZR3's setting using the Passport 8500

Once the Passport 8500 is connected to the ZR3's Interface module, you may change how the Laser Shifters operate. Three options are available: "Shft" (Shifters On/factory default), "Rec" (received only), and "Off" (Laser Shifters will not receive or transmit).

To change the factory default setting:

- 1 To enter Program Mode on the Passport 8500, press and hold both top buttons down for 2 seconds (the unit will beep twice and display the word "Program").
- 2 Then Press the REVIEW button to review current settings (you can either tap the button to change categories, or hold the button down to scroll through them).
- 3 Select the ZR3 category.
- 4 Press the CHANGE button to toggle between "Zr3 SHFT," "Zr3 REC," and "Zr3 OFF."
- 5 To leave the Program Mode, simply wait 8 seconds without pressing any buttons. The unit will display "Complete," beep 4 times, and return to normal operation.

### Visual Laser Alerts

When a laser signal is received from the front, the Passport 8500 will display "F Laser Shifter."

When a laser signal is received from the rear (with the rear Shifter installed) the Passport 8500 will display "R Laser Shifter."

### Dark Mode (on the Passport 8500)

If the Passport 8500 is placed in Dark Mode, the Shifter Display Controller will provide visual alerts for radar and laser. (Note: Radar signals are a series of flashing LED's and do not provide direction indication.)

### Mute

Both the standard remote mute button, and the mute button on the front of the Passport 8500, will provide Mute, and manual "Receive Only" modes.

### Error Messages (using Passport 8500)

#### Front ZR3 Error

During the start-up sequence, if one or both of the front-mounted "Shifters" are not communicating properly, the Passport 8500 will display "Front Shifter Error," accompanied by a double beep tone. This sequence will end, and the Passport 8500 will work normally as a radar/laser detector.

#### Rear ZR3 Error

During the start-up sequence, if the rear Laser Shifter is not installed, or stops communicating, the Passport 8500 will display "Rear Shifter Error," accompanied by a double beep tone. This sequence will end, and the Passport 8500 will work normally as a radar/laser detector.

### Features and Specifications

#### Operating Bands

- Laser 904nm, 33 MHz bandwidth

#### Laser Detection

- Quantum Limited Video Receiver
- Multiple Laser Sensor Diodes (6F, 3R)

#### Laser Transmitter

- Multiple Laser-Shifting Diodes (16F, 8R)

#### Display Type

- Hi-visible LED indicators
- Automatic Brightness Control

#### Power Requirement

- 12VDC, Negative Ground

#### Dimensions (Inches)

- Display/Controller: 4.2 x 1.4 x .55
- Front Laser Units: 4.65 x 1.8 x 0.8
- Rear Laser Unit: 6.0 x 1.0 x .65

### How Laser (Lidar) Works

Laser speed detection is actually LIDAR (Light Detection and Ranging). LIDAR guns project a beam of invisible infrared light. The signal is a series of very short infrared light energy pulses which move in a straight line, reflecting off your car and returning to the gun. LIDAR uses these light pulses to measure the distance to a vehicle. Speed is calculated by comparing the change in distance over time.

LIDAR (or laser) is a newer technology and is not as widespread as conventional radar, therefore, you may not encounter laser on a daily basis. And unlike radar detection, laser detection is not prone to "false" alarms. Because LIDAR transmits a much narrower beam than does radar, it is much more accurate in its ability to distinguish between targets and is also more difficult to detect. ***As a result, even the briefest laser alert should be taken seriously.***

There are limitations to LIDAR equipment. LIDAR is much more sensitive to weather conditions than RADAR, and a LIDAR gun's range will be decreased by anything affecting visibility such as rain, fog, or smoke. A LIDAR gun cannot operate through glass and it must be stationary in order to get an accurate reading. Because LIDAR must have a clear line of sight and is subject to cosine error (an inaccuracy which increases as the angle between the gun and the vehicle increases) police typically use LIDAR equipment parallel to the road or from an overpass. LIDAR can be used day or night.

### Problem

Shifter will not turn on.

Shifter did not alert when a police car was in sight.

Shifter display feels warm.

Shifter's power-on sequence reoccurs while you are driving.

The alert LED stopped flashing when you muted the audio.

During the start-up sequence, the front alert indicator (LED) continues to flash, and a double brap sound is heard.

During the start-up sequence, the rear alert indicator (LED) flashes and a double brap tone is heard.

### Solution

- Check that the volume control is turned ON.
- Check that the vehicle ignition is ON.
- Check all connections.
- Officer may not have the laser unit turned on.
- Officer may have been targeting another vehicle.
- Officer may be using a radar gun, not a laser gun.
- It is normal for the display to feel warm.
- A loose power connection can cause the Shifter to be briefly disconnected, and will trigger the power-on sequence.
- You have engaged the manual shut-off feature which remains in a "receive only" mode for one minute.
- The front Shifters are not communicating to the interface. Check all connections, or contact your installer.
- The rear Shifter is not communicating with the interface. Check all connections, or contact you local installer.

### Service Procedure

*If your ZR3 ever needs service, please follow these steps:*

**1** Check the troubleshooting section of this manual. It may have a solution to your problem.

**2** Contact your local installer or car dealer where you purchased the system. They will evaluate your unit and arrange repairs if necessary.

### Parts

Replacement parts are available through your dealer.

### Accessories

Optional Link Cable for  
Passport 8500/ZR3..... \$9.95

Software Upgrade for  
Passport 8500..... \$29.95

### ESCORT One Year Limited Warranty

ESCORT warrants your Shifter against all defects in materials and workmanship for a period of one (1) year from the date of the original purchase, subject to the following terms and conditions:

The sole responsibility of ESCORT under this Warranty is limited to either repair or, at the option of ESCORT, replacement of the Shifter detector. There are no expressed or implied warranties, including those of fitness for a particular purpose or merchantability, which extend beyond the face hereof. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

This warranty does not cover installation, removal or reinstallation charges. ESCORT is not liable for any incidental or consequential damages arising from the use, misuse, installation, or mounting of the Shifter. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This Warranty gives you specific rights. You may have other legal rights, which vary, from state to state. This Warranty does not apply if the serial number on the housing of the Shifter has been removed, or if your Shifter has been subjected to physical abuse, improper installation, or modification.