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PASSPORT® Qi45

Q U I C K - I N S T A L L E D P R O T E C T I O N



Simple. Easy. Installed.

Designed in the USA

ESCORT Inc.
5440 West Chester Road
West Chester OH 45069

Service 800.543.1608
www.EscortRadar.com

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R A D A R • L A S E R • S A F E T Y • D E T E C T O R

Owner's Manual

Congratulations

Your new PASSPORT Qi45 is a complete supercharged custom-installed radar/laser detector.

The PASSPORT Qi45 includes full X, K, and SuperWide Ka radar capability, Digital Signal Processing for superior range and reduced false alarms, our patented Mute and AutoMute, audible and visual band alerts, and all the performance you'd expect from ESCORT.

In addition, your new PASSPORT Qi45 introduces a new level of Radar/Laser defense including:

- Supercharged radar performance, for superior K, and Ka-band sensitivity.
- Advanced Preferences lets you instantly set up to 6 customized features
- Exclusive AutoSensitivity™ mode drastically reduces false alarms, plus Highway and Auto NoX sensitivity modes.
- Ultra-bright alphanumeric display uses 280 LEDs for crystal clear information
- Exclusive ExpertMeter™ tracks and displays up to 8 radar signals
- Exclusive SpecDisplay provides numeric frequency for any radar signal
- Detects and decodes up to 63 Safety Warning Systems signals
- High-Speed A/D converter dramatically improves radar detection range
- Miniature display controller allows easy access to information and controls.

If you've used a radar detector before, a review of the Quick Reference Guide on pages 4 and 5, and the Preferences section on pages 12 and 13 will briefly explain the new features.

If this is your first detector, please read this manual in detail to get the most out of your PASSPORT's performance and features. Please drive safely.

IMPORTANT INSTALLATION WARNING:

Your new PASSPORT Qi45 requires installation. Although we've made this the simplest product to install, we do recommend that you consult a 12-volt professional if you have no experience with 12-volt installations. If you would like professional installation, simply visit our web site.

Attempting to install the PASSPORT Qi45 without expertise in automotive electronic installations can cause personal injury during the installation, or can damage your PASSPORT or your vehicle.

FCC NOTE:

Modifications not expressly approved by the manufacturer could void the user's FCC granted authority to operate the equipment.

Quick Reference Card



▼ Remove card along perforations ▼

PASSPORT Qi45 Quick Reference Card

There are 6 user-selectable options so you can customize your PASSPORT Qi45 for your own preferences.

The buttons labeled BRT and SENS are also used to enter the PROGRAM Mode, REVIEW your current program settings, and to CHANGE any settings as desired. The words PGM, RVW, and CHG are located below the push buttons, and are labeled in light gray graphics.

How to use Preferences

1 To enter Preferences, press and hold both the BRT and SENS buttons down for 2 seconds. The unit will beep twice, and will display the word **Prefs.**

2 Then press the REVIEW button to review the current settings. You can either tap the button to change from item to item, or hold the button to scroll through the items.

3 Press the CHANGE button to change any setting. You can either tap the button to change from setting to setting, or hold the button to scroll through all the options.

4 To leave Preferences, simply wait 8 seconds without pressing any button. The unit will display **Complete**, beep and return to normal operation.

Factory Default Settings

To reset PASSPORT to its original factory settings, press and hold the "BRT," "SENS," and "Q" buttons while turning the power on. PASSPORT's display will provide a **Reset** message, accompanied by an audible tone, acknowledging the reset.

An example

Here is how you would turn PASSPORT's AutoMute feature off.

1 Enter the Program Mode by holding both the BRT and SENS buttons down for 2 seconds. PASSPORT will beep and display **Prefs.**

2 Then hold the REVIEW button down. PASSPORT will scroll through the categories, starting with Pilot Light (**Pilot**), then Power-on sequence (**Power On**), then Signal strength meter (**Meter**), and then AutoMute (**Mute**).

3 Release the REVIEW button when PASSPORT shows the AutoMute item. Since the factory setting is for AutoMute to be on, PASSPORT will display **aMute ON**.

If you accidentally don't release the Review button in time, and PASSPORT goes to the next category, hold the Review button down again, and after PASSPORT scrolls through all categories, it will begin again at the top of the list.

4 Press the CHANGE button to change from **aMute ON** to **aMute OFF**.

5 To exit the Preferences, simply wait 8 seconds without pressing any button. PASSPORT will display **Complete**, accompanied by an audible tone or voice message, and return to normal operation.

Preferences Details ►

Quick Reference Card



Remove card along perforations

PASSPORT Qi45 Quick Reference Card

Press the **REVIEW** button to go from one category to the next

Press the **CHANGE** button to change your setting within a category

PILOT LIGHT (Power-on indication)	Pilot HWY Pilot H Pilot H.> Pilot U	*Full word: Highway or Auto or Auto NoX Letter: H or A or ANX Letter, with scanning dot Vehicle voltage
POWER-ON SEQUENCE	PwrOn FST PwrOn STD	*Fast power-on sequence Standard power-on sequence
SIGNAL STRENGTH METER	Meter STD Meter EXP Meter SPC	*Standard signal strength meter Expert Meter SpecDisplay
AUTOMUTE	aMute ON aMute OFF	*AutoMute on AutoMute off
VOICE	Voice ON Voice OFF	*Voice alerts on Voice alerts off
BANDS	Bands DFT Bands MOD	*Factory default settings One or more bands have been changed

Turn bands "ON" or "OFF" by pressing the V-MUTE button

- X ON or OFF (default is on)
- Ku ON or OFF (default is off)
- K ON or OFF (default is on)
- Ka ON or OFF (default is on)
- POP ON or OFF (default is off)
- SWs ON or OFF (default is off)
- LSR ON or OFF (default is on)
- TSR ON or OFF (default is off)

*Factory Default Settings

Remove card along perforations

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Quick Reference Guide

Power

To turn the Qi45 on or off, simply press the power button located on the far left side of the display controller.

NOTE: We recommend wiring the Qi45 to the vehicle's ignition switch so it turns on and off with the key.

V•MUTE (Volume Control/Mute) Button

To set your volume level for alerts, press and hold the V•MUTE button located in the center of the display controller. Once you've reached your desired level of audio, simply release the button. Passport will remember this setting even when power is turned off.

To mute an audible alert, briefly press this button on the display controller to silence the audio for a specific alert. (The audio will alert you to the next encounter.)
Page 7

AutoMute

Passport's patented AutoMute automatically reduces the volume level of the audio alert.
Page 7

If you prefer, you can turn AutoMute off. *Page 12*



Matrix Display

PASSPORT's display will show "Highway", "Auto," or "Auto NoX" as its standard power-on indication. *Page 6*

If you prefer, you can choose other power-on indications. *Page 14*

During an alert, the display will indicate radar band, and a precise bar graph for the signal strength. *Page 9*

You can program PASSPORT for ExpertMeter, which displays up to 8 radar signals at once, or choose our new SpecDisplay mode, which provides the actual numeric radar frequency. *Page 10-11*

The display can also show Safety Radar text messages. *Pages 22-23*

BRT Button

Press to adjust display brightness. There are three brightness settings, plus Dark Mode.

In the Dark Mode PASSPORT's display will remain dark and only the audio will alert you. *Page 9*

SENS Button

The sensitivity button, (SENS) toggles between sensitivity modes including "auto" (AutoSensitivity), "Auto Nox", and Highway settings. In general, we recommend the Auto mode. *Page 7*


Preferences

PASSPORT is preset at the factory and ready to go once it is installed—just turn it on. But you can also easily change 6 features for your preferences. Press both buttons to enter the Preferences, then easily Review or Change your settings. *Pages 12-15*

Controls and Features

Power

The PASSPORT Qi45 was designed to turn on and off with the ignition once it is installed. This is accomplished by connecting the 12-volt Interface to a switched ACC connection at the fuse panel. (See installation manual for instructions.)

If you prefer, you may also turn the Qi45 on and off by pressing the power button  located on the display controller.

Power-on indication

After PASSPORT's start-up sequence is complete, the matrix display will show "Highway", "Auto" or "Auto NoX" to show which sensitivity mode has been selected.

If you prefer, you can select alternate power-on displays. See the Preferences section for details

Volume Adjust

To adjust the Qi45 to your preferred audio level for alerts, simply press and hold the V•Mute button located on the display controller. The audio will increase/decrease while it is depressed. Once you reach the desired audio level, simply release the button. The Qi45 will retain this setting in its memory, even if the system is turned off.

When the optional Laser Shifters are connected, (see Accessories section) the V•Mute button can be used to manually stop "shifting" once you have corrected your speed. Simply press the V•Mute twice during the "Laser Shifting" message, and the Shifter's will cease to transmit. The Shifters will remain in this state for approximately two minutes. Once this time has passed, the Shifters will automatically reset. A reset message will be displayed to verify and acknowledge this reset.

Mute

The V•Mute button, located on the display controller, allows you to silence the audio during an alert.

To mute the audio for a single specific signal, briefly press the V•MUTE button. After that radar encounter has passed, the audio will automatically reset and the Qi45 will alert you to the next encounter.

AutoMute

Your Qi45 has our patented AutoMute feature. After the Qi45 alerts you to a radar encounter at your selected volume level, it automatically reduces the volume to a lower level. This keeps you informed without the annoyance of a continuous full-volume alert.

If you prefer, you can turn the AutoMute feature off. See the Preferences section for details.

Auto / Highway / Auto NoX

The "SENS" button selects the Qi45's sensitivity setting. We recommend the "Auto" (AutoSensitivity) mode for most driving.

PASSPORT's exclusive AutoSensitivity mode provides long-range warning, with minimum false alarms. In this mode, PASSPORT's internal computer continuously analyzes all incoming signals and intelligently adjusts the sensitivity—eliminating the majority of false alarms. You can also select conventional "Highway," which provides the maximum sensitivity. Auto NoX provides the same sensitivity as "Auto" but turns off X-band completely. Full sensitivity is maintained on all other bands.

NOTE: Before using the Qi45 in the "Auto NoX" mode, please make sure your area does not use X-band guns to measure speed.

Controls and Features

Display Brightness

The Qi45's display brightness is automatically adjusted to suit ambient lighting conditions in your car. (The light sensor is located inside the display controller and may dim the display momentarily when accessing the buttons).

If you prefer, you can press the "BRT" button located on the display controller to set your Qi45 for a fixed brightness level (Maximum, Medium, Minimum, or Dark).

Dark Mode

If you select Dark mode on the Qi45, the display will not provide any indication that it is on.

NOTE: When the Qi45 is in the Dark Mode, the display will not show visual alerts when it detects signals. Only the audible alert will tell you of detected signals.

Audible Alerts

For Radar signals:

The Qi45 uses a Geiger-counter-like sound or voice announcements to indicate the signal strength and type of radar signal being encountered.

When you encounter radar, a distinct Audible Alert will sound and will increase as the signal gets stronger. This allows you to judge the distance from the signal source without taking your eyes from the road.

Each band has a distinct tone for easy identification.

X-band = beep tone

Ku-band = rapid beep tone

K-band = raspy brap tone

Ka-band = double-brap tone

For Laser signals:

Since Laser signals are a possible threat no matter how weak, the Qi45 alerts you to all laser signals with a full laser alert.

For Safety signals:

If you have turned on the SWS detection in the Qi45's Preferences section, the Qi45 will alert you to these signals with a double-beep tone, and a corresponding text message. A complete listing of the text messages is on page 23.

If you haven't turned on SWS in Preferences, the Qi45 will not decode these transmissions but will still detect them as a K-band radar signal.

Signal Strength Meter

The Qi45's matrix display consists of 280 individual LED's, to provide an intuitive ultra-bright display of signal strength and text messages.

When it detects radar, it displays the band of the radar (X, K, or Ka), and a precise bar graph of signal strength.

Controls and Features

ExpertMeter

PASSPORT's exclusive ExpertMeter option is an advanced display for experienced detector users. Please use the Qi45 for a few weeks to get fully familiar with its other features before using ExpertMeter.

To use the ExpertMeter instead of the standard bar graph signal strength meter, you must select MeterEXP in the Qi45's Preferences (see pages 12-15).

ExpertMeter simultaneously tracks up to 8 radar signals. It shows you detailed information on up to 2 Ka-band, 2 K-band, and 4 X-band signals.

ExpertMeter can help you spot a change in your normal driving environment; for example, a traffic radar unit being operated in an area where there are normally other signals present.

The ExpertMeter is actually a miniature spectrum analyzer. It shows what band each signal is, and its signal strength.



KAKK KKKK XXXX

Above is the ExpertMeter Display if PASSPORT was detecting 2 strong Ka-band, 2 strong K-band, and 4 strong X-band signals.

As you can see, there are vertical lines after each band designator. Each line shows a signal being detected. The height of each line shows the relative signal strength of that signal. The position of the line shows the relative frequency of the signal within the band.

NOTE: If you use ExpertMeter, the brief signal shown in the power-on sequence when you turn on your PASSPORT will also be in ExpertMeter: an X with a single vertical line.

A few more examples will help you better see how the ExpertMeter works.



KI XII

Here ExpertMeter shows 1 strong K-band signal, and three X-band signals, two strong and one weak.



Ka X

Here ExpertMeter shows 1 weak Ka-band signal, and three weak X-band signals.



X

On very weak signals, there will not be a vertical line at all. This shows a very weak X-band signal.

ExpertMeter Details

The band designators (X, K, Ka) will stay on the display for a few seconds after the signal has passed. This allows you to see what the unit detected, even on very brief signals.

However, the vertical lines representing individual signals continuously change (several times a second) to give you a continuous view of the signal strength of all radar signals present.

SpecDisplay

The Qi45's SpecDisplay option is also designed for the advanced detector user. In this mode, it will display the actual numeric radar frequency being received



K 24.150

Display shows a K-band signal at 24.150 GbZ.



Ka 34.700

Display shows a Ka-band signal at 34.700 GbZ.



X 10.525

Display shows a X-band signal at 10.525 GbZ.

NOTE: Even long-time detector users will require a significant amount of time to get familiar with this new level of information about detected signals.

How to use Preferences

There are 6 user-selectable options in the Qi45's Preferences. This allows you to set it up the way you prefer.

To access Preferences, simply press the buttons that are normally used for brightness (BRT) and sensitivity (SENS) at the same time. Once you access Preferences, the BRT button is used to review (RVW) the categories and the SENS button is used to change (CHG) items within the category. Pages 14-15 explain each option in more detail.

How to use Preferences

- To enter Preferences, press both buttons and hold for 2 seconds.** The Qi45 will beep and display `Préf.` (Brightness is at maximum during this process.)
- Then press the RVW button to review the current settings.** You can either tap the button to change from item to item, or hold the button to scroll through the items.
- Press the CHG button to change any setting.** You can either tap the button to change from setting to setting, or hold the button to scroll through all the options.
- To leave the Preferences, simply wait 8 seconds without pressing any button.** The unit will display `Complete`, beep and return to normal operation.
To quickly return to all of the factory defaults, press and hold the BRT and SENS buttons while turning on the unit.

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An example

Here's how you would turn the Qi45's AutoMute feature off.

- Enter Preferences by holding both buttons down for 2 seconds. *The Qi45 will beep and display `Préf.`*
- Then hold the RVW button down. *The Qi45 will scroll through the categories, starting with `Display`, then `Pilot Light` (`Pilot`), then `Power-on sequence` (`PwrOn`), then `Signal strength meter` (`Meter`), then `AutoMute` (`aMute`).*
- Release the RVW button when the display shows `AutoMute`. *Since the factory setting is for `AutoMute` to be on, the Qi45 will display `aMute ON`.
If you accidentally don't release the RVW button in time and it goes to the next category, simply hold the RVW button down again until `aMute` is displayed.*
- Press the CHG button to change from `aMute ON` to `aMute OFF`.

- To complete this change, simply wait 8 seconds without pressing any button. *The display will provide a `Complete` message, accompanied by an audible tone or voice announcement. This is an indication that the Qi45 has returned to its normal operation.*

Overview of Preferences

Press the REVIEW button to go from one category to the next

PILOT LIGHT
(Power-on indication)

Pilot HWY
Pilot H
Pilot H.>
Pilot U

POWER-ON SEQUENCE

PwrOn FST
PwrOn STD

SIGNAL STRENGTH METER

Meter STD
Meter EXP
Meter SPC

AUTOMUTE

aMute ON
aMute OFF

VOICE

Voice ON
Voice OFF

BANDS

Bands DFT
Bands MOD

Press the CHANGE button to change your setting within a category

* Full word: Highway or Auto or AutoNoX
Letter: H or A or ANX
Letter, with scanning dot
Vehicle voltage

* Fast power-on sequence
Standard power-on sequence

* Standard signal strength meter
Expert Meter
SpecDisplay

* AutoMute on
AutoMute off

* Voice alerts on
Voice alerts off

* Factory default settings
One or more bands have been changed

Turn bands on or off by pressing and holding the V•MUTE button

X ON or OFF (default is on)
Ku ON or OFF (default is off)
K ON or OFF (default is on)
Ka ON or OFF (default is on)
POP ON or OFF (default is off)
SWS ON or OFF (default is off)
LSR ON or OFF (default is on)
TSR ON or OFF (default is off)

* Factory Default Settings

To reset the Qi45 to its original factory settings, press and hold the "BRT" and "SENS" buttons while turning the power on. The display will provide a `Reset` message, accompanied by an audible tone, acknowledging the reset.

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Details of Preferences Options

Pilot Light (Power-on indication)

NOTE: When you are using the Dark Mode, the display will be completely dark.

PilotHWY (Full description)

In this setting, the Qi45 will display Highway, Auto, or Auto NoX as its power-on indication. (factory default)

Pilot H (Letter)

In this setting, the Qi45 will display H for Highway, A for Auto and AnX for Auto NoX.

Pilot H.> (Letter with scanning dot)

In this setting, the Qi45 will display H for Highway, A for Auto, and AnX for Auto NoX. In addition, a single dot will continuously scroll across the display.

Pilot V (Vehicle voltage)

In this setting, the Qi45 will continually display H for Highway, A for Auto, and AnX for Auto NoX, plus the vehicle's voltage.

NOTE: If the vehicle's voltage drops below 10.5 volts, a low voltage warning will be displayed, followed by an audible alert. A high voltage warning is also given when the vehicle's voltage goes above 16.5 volts.

Power-on Sequence

PwrOnFST (Fast power-on)

This setting shortens the Qi45's start up sequence to a single beep. (factory default)

PwrOnSTD (Standard)

In this setting, each time you turn on the Qi45, it will display Passport, QI45, LASER, Ka-band, K-band, X-band, followed by a brief X-band alert.

Signal Strength Meter

MeterSTD (Standard meter)

The meter displays the band, and bar graph showing signal strength. (factory default)

MeterEXP (ExpertMeter)

The meter simultaneously tracks up to 2 Ka-band, 2 K-band, and 4 X-band signals.

MeterSPC (SpecDisplay)

The meter displays the actual numeric frequency of the radar signal being received.

NOTE: See more details on pages 10-11.

AutoMute

aMute ON (AutoMute on)

In this setting, the Qi45's audio alerts will initially be set to the volume level you selected. However, after a few seconds, the audio level will automatically be reduced to keep you informed, but not annoyed. (factory default)

aMuteOFF (AutoMute off)

With AutoMute off, the audio alerts will remain at the volume you set for the duration of the encounter.

Voice Announcements

VoiceON (Voice announcements on)

In this setting, all alerts and instructions are communicated using a voice announcement. (factory default)

VoiceOFF (Voice announcements off)

With voice off, normal tones will be used for alerts.

Bands

BandsDFT

In this setting, all radar and laser bands are covered for North America. These are the factory settings, and it is highly recommended that you use your Qi45 in this mode.

BandsMOD

If the bands are changed from the factory default settings, the Qi45 will warn you with an audible alert, and associated text message, that one or more bands have been changed in Preferences (i.e. "X-Band OFF"). This warning is displayed during the start-up sequence (standard or fast).

WARNING: Only modify bands if you are absolutely certain that there are no traffic radar guns using that specific band in your area.

Specifications

Features and Specifications

Operating Bands

- X-band 10.525 GHz ±25 MHz
- Ku-band 13.450 GHz ±25 MHz
- K-band 24.150 GHz ±100 MHz
- Ka-band 34.700 GHz ±1300 MHz
- Laser 904nm, 33 MHz bandwidth

Radar Receiver / Detector Type

- Superheterodyne, GaAs FETVCO
- Scanning Frequency Discriminator
- Digital Signal Processing (DSP)
- 4-bit high-resolution A-to-D converter

Laser Detection

- Quantum Limited Video Receiver

Display Type

- HP AlGaAs 280 LED Matrix/Text
- Bar Graph or ExpertMeter
- Automatic brightness control

Power Requirement

- 12VDC, Negative Ground

User Preferences

- Power-On Indication
- Power-On Sequence
- Signal Strength Meter
- AutoMute
- Voice
- Bands

Sensitivity Control

- AutoSensitivity, Highway and Auto NoX
- Auto Calibration Circuitry
- Complete VG2 Immunity

Dimensions (Inches)

- Display/Controller
1.00 H x 2.00 W x 0.50 D
- Receiver Unit
5.40 x 3.70 x 1.05 inches

Patented Technology

PASSPORT is covered by one or more of the following U.S. patents:
7,576,679 7,397,416 7,388,537 7,098,844
6,836,238 6,779,765 6,693,578 6,670,905
6,614,385 6,587,068 6,400,305 6,249,218
6,127,962 6,069,580 5,668,554 5,600,132
5,587,916 5,559,508 5,446,923 5,402,087
5,365,055 5,347,120 5,305,007 5,206,500
5,164,729 5,134,406 5,111,207 5,079,553
5,049,885 5,049,884 4,961,074 4,954,828
4,952,937 4,952,936 4,939,521 4,896,855
4,887,753 4,862,175 4,750,215 4,686,499
4,631,542 4,630,054 4,625,210 4,613,989
4,604,529 4,583,057 4,581,769 4,571,593
4,313,216 D314,178 D313,365 D310,167
D308,837 D296,771 D288,418 D253,752
Canadian patents:
2,337,077 2,330,964 1,295,715 1,295,714
1,187,602 1,187,586
European patents:
1,145,030 1,090,456
Other Patents Pending.

Interpreting Alerts

Although PASSPORT has a comprehensive warning system and this handbook is as complete as we can make it, only experience will teach you what to expect from your PASSPORT and how to interpret what it “tells” you. The radar alerts you receive are affected by the specific type of

radar being used, the type of transmission (continuous or instant-on) and the location of the radar source.

The following examples will give you an introduction to understanding PASSPORT’s warning system for radar, laser and safety alerts.

Alert

PASSPORT begins to sound slowly, then the rate of alert increases until the alert becomes a solid tone. The Signal Meter ramps accordingly.

PASSPORT emits short alerts for a few seconds and then falls silent only to briefly alert and fall silent again.

PASSPORT suddenly sounds a continuous tone for the appropriate band received. All segments in the Signal Strength Meter are lit.

A brief laser alert.

PASSPORT receives weak signals. These signals may be a little stronger as you pass large, roadside objects. The signals increase in frequency.

PASSPORT alerts slowly for awhile and then abruptly jumps to a strong alert.

Explanation

You are approaching a continuous radar source aimed in your direction.

An instant-on radar source is being used ahead of you and out of your view.

An instant-on radar source or laser source is being used nearby. This kind of alert requires immediate attention!

Laser is being used in the area. Because laser is inherently difficult to detect, any laser alert may indicate a source very close by.

A moving patrol car with continuous radar is overtaking you from behind. Because these signals are reflected (reflections are increased by large objects), they may or may not eventually melt into a solid point even when the patrol car is directly behind you.

You are approaching a radar unit concealed by a hill or an obstructed curve.

Interpreting Alerts

Alert

PASSPORT alerts intermittently. Rate and strength of alerts may be consistent or vary wildly.

Explanation

A patrol car is traveling in front of you with a radar source aimed forward. Because signals are sometimes reflected off of large objects and sometimes not, the alerts may seem inconsistent.

PASSPORT alerts intermittently. Rate and strength of signal increases with each alert.

A patrol car is approaching from the other direction, "sampling" traffic with instant-on radar. Such alerts should be taken seriously.

PASSPORT gives an X-band alert intermittently.

You are driving through an area populated with radar motion sensors (door openers, burglar alarms, etc.). Since these transmitters are usually contained inside buildings or aimed toward OR away from you, they are typically not as strong or lasting as a real radar encounter.

CAUTION: Since the characteristics of these alerts may be similar to some of the preceding examples, over confidence in an unfamiliar area can be dangerous. Likewise, if an alert in a commonly traveled area is suddenly stronger or on a different band than usual, speed radar may be set up nearby.

How Radar Works

How Radar Works

Traffic radar, which consists of microwaves, travels in straight lines and is easily reflected by objects such as cars, trucks, even guardrails and overpasses. Radar works by directing its microwave beam down the road. As your vehicle travels into range, the microwave beam bounces off your car, and the radar antenna looks for the reflections. Using the Doppler Principle, the radar equipment then calculates your speed by comparing the frequency of the reflection of your car to the original frequency of the beam sent out.

Traffic radar has limitations, the most significant of these being that it typically can monitor only one target at a time. If there is more than one vehicle within range, it is up to the radar operator to decide which target is producing the strongest reflection. Since the strength of the reflection is affected by both the size of the vehicle and its proximity to the antenna, it is difficult for the radar operator to determine if the signal is from a sports car nearby or a semi-truck several hundred feet away.

Radar range also depends on the power of the radar equipment itself. The strength of the radar unit's beam diminishes with distance. The farther the radar has to travel, the less energy it has for speed detection.

How POP Works

Because intrusion alarms and motion sensors often operate on the same frequency as X-Band radar, your PASSPORT will occasionally receive non-police radar signals. Since these X-Band transmitters are usually contained inside of a building, or aimed toward the ground, they will generally produce much weaker readings than will a true radar encounter. As you become familiar with the sources of these pseudo alarms in your daily driving, they will serve as confirmation that your PASSPORT's radar detection abilities are fully operational.

How "POP" Works

"POP" mode is a relatively new feature for radar gun manufacturers. It works by transmitting an extremely short burst, within the allocated band, to identify speeding vehicles in traffic. Once the target is identified, or "POPPED," the gun is then turned to its normal operating mode to provide a vehicle tracking history, (required by law).

NOTE: According to the operator's manual from the radar gun manufacturer, tickets should not be issued in this mode.

How Laser Works

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 then calculated by measuring how quickly these pulses are reflected given the known speed of light.

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.***

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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.

How TSR Works

How TSR Works

Several manufacturers of traffic flow monitoring systems use K-band transmitters to sense traffic movement. Unfortunately these sensors are transmitting in an "instant on" mode, which creates a false alert. These sensors are positioned approximately 1 mile apart and turn on and off approximately every minute.



These sensors are fully self-contained and roadside-mounted.

Some of the markets where these sensors are located include:

Omaha NE
Raleigh-Durham NC
San Francisco CA
San Jose CA
Santa Barbara CA
Ventura CA
Washington DC
Dayton OH
Denver CO
Everett WA
Lincoln NE
New York NY
Oakland CA
Olympia WA

Our exclusive TSR anti-falsing software rejects these unwanted signals. Since not all markets have this type of traffic flow system, your detector has been pre-set with TSR turned off.

To turn TSR on, simply visit the Preferences section. Under "Bands", select TSR "on".

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How SWS Works

How SWS Works

There are two separate Safety Radar systems in limited use today: Safety Alert, and Safety Warning System (SWS). Both systems use modified K-band radar signals.

From the factory, your PASSPORT is programmed with safety radar decoding OFF. If Safety Radar is used in your area, your PASSPORT will display these signals as K-band radar signals instead of safety radar unless you use the Preferences to turn PASSPORT's safety radar decoding ON.

The Safety Alert safety radar system has three possible alerts:

- Safety Vehicle
- Road Hazard
- Train Nearby

The SWS safety radar system has 64 possible messages (60 currently allocated). The SWS messages your PASSPORT can display are listed on the facing page.

NOTE: Some of the safety messages have been condensed, so that each message can be displayed on one or two screens on PASSPORT's eight-character display.

Since Safety radar technology is relatively new and the number of transmitters in operation is not yet widespread, you will not receive Safety signals on a daily basis and should not be surprised to encounter emergency vehicles, road hazards and railroad crossings that are unequipped with these transmitters and, therefore, fail to provide a signal.

SWS Text Messages

Highway Construction or Maintenance

- 1 Work Zone Ahead
- 2 Road Closed Ahead/Follow Detour
- 3 Bridge Closed Ahead/Follow Detour
- 4 Highway Work Crews Ahead
- 5 Utility Work Crews Ahead
- 6 All Traffic Follow Detour Ahead
- 7 All Trucks Follow Detour Ahead
- 8 All Traffic Exit Ahead
- 9 Right Lane Closed Ahead
- 10 Center Lane Closed Ahead
- 11 Left Lane Closed Ahead
- 12 *For future use*

Highway Hazard Zone Advisory

- 13 Stationary Police Vehicle Ahead
- 14 Train Approaching/At Crossing
- 15 Low Overpass Ahead
- 16 Drawbridge Up
- 17 Observe Drawbridge Weight Limit
- 18 Rock Slide Area Ahead
- 19 School Zone Ahead
- 20 Road Narrows Ahead
- 21 Sharp Curve Ahead
- 22 Pedestrian Crossing Ahead
- 23 Deer/Moose Crossing
- 24 Blind/Deaf Child Area
- 25 Steep Grade Ahead/Truck Use Low Gear
- 26 Accident Ahead
- 27 Poor Road Surface Ahead
- 28 School Bus Loading/Unloading
- 29 No Passing Zone
- 30 Dangerous Intersection Ahead
- 31 Stationary Emergency Vehicle Ahead
- 32 *For future use*

Weather Related Hazards

- 33 High Wind Ahead
- 34 Severe Weather Ahead
- 35 Heavy Fog Ahead
- 36 High Water/Flooding Ahead
- 37 Ice On Bridge Ahead
- 38 Ice On Road Ahead
- 39 Blowing Dust Ahead
- 40 Blowing Sand Ahead
- 41 Blinding Snow Whiteout Ahead
- 42 *For future use*

Travel Information/Convenience

- 43 Rest Area Ahead
 - 44 Rest Area With Service Ahead
 - 45 24 Hour Fuel Service Ahead
 - 46 Inspection Station Open
 - 47 Inspection Station Closed
 - 48 Reduced Speed Area Ahead
 - 49 Speed Limit Enforced
 - 50 Hazardous Materials Exit Ahead
 - 51 Congestion Ahead/Expect Delay
 - 52 Expect 10 Minute Delay
 - 53 Expect 20 Minute Delay
 - 54 Expect 30 Minute Delay
 - 55 Expect 1 Hour Delay
 - 56 Traffic Alert/Tune AM Radio
 - 57 Pay Toll Ahead
 - 58 Trucks Exit Right
 - 59 Trucks Exit Left
 - 60 *For future use*
- #### Fast/Slow Moving Vehicles
- 61 Emergency Vehicle In Transit
 - 62 Police In Pursuit
 - 63 Oversize Vehicle In Transit
 - 64 Slow Moving Vehicle

Troubleshooting

Problem	Solution
PASSPORT beeps briefly at the same location every day, but no radar source is in sight.	<ul style="list-style-type: none"> An X-band motion sensor or intrusion alarm is located within range of your route. With time, you will learn predictable patterns of these signals.
PASSPORT does not seem sensitive to radar or laser.	<ul style="list-style-type: none"> PASSPORT may be in City Mode.
PASSPORT did not alert when a police car was in view.	<ul style="list-style-type: none"> VASCAR (Visual Average Speed Computer and Recorder) a stopwatch method of speed detection, may be in use. Officer may not have radar or laser unit turned on.
PASSPORT did not provide a Safety signal while within range of an emergency vehicle.	<ul style="list-style-type: none"> Safety transmitters may not be commonly used in your area.
PASSPORT's audible alerts are less loud after the first few alerts.	<ul style="list-style-type: none"> PASSPORT is in AutoMute Mode. See page 4 for details.
PASSPORT's power-on sequence reoccurs while you are driving.	<ul style="list-style-type: none"> A loose power connection can cause PASSPORT to be briefly disconnected, and will retrigger the power-on sequence.
Your 14-year old son has changed all 6 of the User Preferences options.	You can return all of the User Preferences to the factory defaults by holding down the City and Mute buttons while you turn PASSPORT on.
PASSPORT will not turn on.	<ul style="list-style-type: none"> Check that volume control is ON. Check that vehicle ignition is ON. Check all connections.
PASSPORT feels very warm.	<ul style="list-style-type: none"> It is normal for PASSPORT to feel warm.

Explanation of Displays

Check Receiver Wiring	There is a problem with the front receiver (it could be an unplugged connection, damaged wiring, or a problem within the front receiver itself). PASSPORT will continue to display this message, and will not operate until the problem has been repaired.
PilotHWY	One of the many options in Preferences (pages 12-15)
WorkZone	One of the many Safety Radar messages (pages 22-23)
Caution	PASSPORT has detected a Safety Radar Signal, but the signal isn't yet strong enough to decode the specific safety message (page 22-23)
XI, or KI, or KAI etc.	PASSPORT has been programmed in the ExpertMeter Mode (pages 10-11)

Service

Service Procedure

If Your PASSPORT ever needs service, please follow these simple steps:

- 1 Check the troubleshooting section of this manual. It may have a solution to your problem.
- 2 Contact your installing dealer. They will evaluate your unit and arrange repairs if necessary. If you installed it yourself, please contact our customer service team at 800-543-1608.

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Warranty

ESCORT One Year Limited Warranty

ESCORT warrants your PASSPORT 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 PASSPORT 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 PASSPORT. 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 PASSPORT has been removed, or if your PASSPORT has been subjected to physical abuse, improper installation, or modification.

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ESCORT®

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5. Would you like to be added to our mailing list? Yes No
6. Would you like us to e-mail you with updates? Yes No

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Accessories



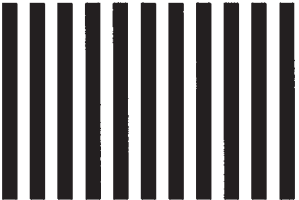
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