BELTRONICS®
PERFORMANCE RULES.™

STEALTH INSTALLED

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Made in Canada
Features, specifications and prices subject to change without notice.
Model: STi-R

BELTRONICS®
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STi R

DIGITAL RADAR • LASER • SAFETY DETECTOR

Owner's Manual

Congratulations

The BELTRONICS STi-R is the most advanced stealth-installed radar, laser and safety detector ever designed.

The STi-R includes full X, K, SuperWide Ka, and Safety Warning System radar capability, front laser detection, dual LNA (low noise amplifier) microwave receivers, digital signal processing (DSP) 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 BELTRONICS.

In addition, the BELTRONICS STi-R contains the following revolutionary features:

- Dual LNA (low noise amplifier) receivers provide the longest possible warning against all radar threats.
- TotalShield™ RF Technology provides the ultimate in undetectability.
- High and low voltage warning is given any time the vehicle's voltage drops below 10.5 volts, or goes above 16.5 volts.
- Easy-to-use Programming lets you customize up to 7 features.
- Exclusive AutoScan mode intelligently reduces unwanted false alarms.
- Ultra-bright text-display provides easy to read information from any angle.
- Tech Display provides actual numeric radar frequency for any radar signal.
- Programmable Bands (on/off).
- Detects and decodes up to 64 Safety Warning System messages

If you've used a radar detector before, a review of the Quick Reference Guide on pages 4 and 5, and the Programming information on pages 6 through 9 will briefly explain the new features.

If this is your first detector, please read the manual in detail to get the most out of your BELTRONICS STi-R's outstanding performance and innovative features.

Please drive safely.

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* ▼

BELTRONICS STi-R Quick Reference Card

There are 7 user-selectable options so you can customize your STi-R for your own preferences.

The buttons labeled VOL/MUTE and SENS are also used to enter the Programming Mode, REVIEW your current program settings, and to CHANGE any settings as desired.

How to use Programming

1 To enter Program Mode, press and hold both VOL/MUTE and SENS buttons down for 2 seconds. The unit will beep twice, and display the word Program.

2 Then press the VOL/MUTE 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 SENS 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 Program Mode, simply wait 8 seconds without pressing any button, or mometarily press the PWR button. The unit will display Complete, beep 4 times, and return to normal operation.

▶ *Remove card along perforations* ▶

Factory Default Settings

To reset the STi-R to its original factory settings, press and hold the "VOL/MUTE" and "SENS" buttons while turning the power on. The STi-R's display will provide a Reset message, accompanied by an audible alert acknowledging the reset.

An example

Here is how you would turn the STi-R's AutoMute feature off.

1 Enter the Program Mode by holding both the VOL/MUTE and SENS buttons down for 2 seconds. *The STi-R will beep twice and display* Program.

2 Then hold the VOL/MUTE button down. *The STi-R will scroll through the categories, starting with power-on indication (*Pilot*), Voice, Power-on sequence, signal strength meter, and then AutoMute.*

3 Release the VOL/MUTE button when the STi-R shows the AutoMute item. *Since the factory setting is for AutoMute to be on, the STi-R will display* aMute ON.

If you accidentally don't release the Review button in time, and the STi-R goes to the next category, hold the VOL/MUTE button down again, and scroll through the categories again until aMute *is displayed.*

4 Press the SENS button to change from aMute ON to aMute OFF.

5 To complete the Programming, simply wait 8 seconds without pressing any button, or press the PWR button. *The STi-R will display* Complete, *beep 4 times, and return to normal operation.*

Programming Details ▶

Quick Reference Card

▼ *Remove card along perforations* ▼

BELTRONICS STi-R Quick Reference Card

Press the VOL/MUTE button to go from one category to the next

Press the SENS button to change your setting within a category

PILOT (Power-on indication)	Pilot HWY	*Full word: Highway, AutoScan, etc.
	Pilot H	Letter: H, A, C, or Cnx
	Pilot V	Vehicle voltage
VOICE	Voice ON	*Voice alerts on
	Voice OFF	Voice alerts off
POWER-ON SEQUENCE	PwrOn STD	*Standard power-on sequence
	PwrOn FST	Fast power-on sequence
SIGNAL STRENGTH METER	Meter STD	*Standard signal strength meter
	Meter THT	Threat Display
	Meter TEC	Tech Display
AUTOMUTE	aMute ON	*AutoMute on
	aMute OFF	AutoMute off
BRIGHTNESS	Brt Auto	*Automatic brightness
	Brt Min	Minimum brightness
	Brt Med	Medium brightness
	Brt Max	Maximum brightness
	Brt Dark	All dark
BANDS	Bands DFT	*Factory default settings
	Bands MOD	Factory default settings modified

When KaSW is off, each Ka segment can be turned on or off

Ka1	(33.392 - 33.704)	ON or OFF
Ka2	(33.704 - 33.896)	ON or OFF
Ka3	(33.886 - 34.198)	ON or OFF
Ka4	(34.184 - 34.592)	ON or OFF
Ka5	(34.592 - 34.808)	ON or OFF
Ka6	(34.806 - 35.166)	ON or OFF
Ka7	(34.143 - 35.383)	ON or OFF
Ka8	(35.378 - 35.618)	ON or OFF
Ka9	(35.595 - 35.835)	ON or OFF
Ka10	(35.830 - 35.998)	ON or OFF

Turn bands "ON" or "OFF" by pressing and holding the "SENS" button

X	ON or OFF (default is on)
K	ON or OFF (default is on)
KaSW	ON or OFF (default is on)
LSR	ON or OFF (default is on)
SWS	ON or OFF (default is off)
POP	ON or OFF (default is off)
RDR	ON or OFF (default is on)

* Factory Default Settings

◀ *Remove card along perforations* ◀

Table of Contents

Once your STi-R has been installed, just follow these simple steps

1. Press the PWR button, located on the left side of the controller, to turn the STi-R on/off. If installed to a switched accessory, the Sti-R will turn on/off with the vehicle's ignition.

2. Press and hold the VOL/MUTE button to adjust the volume level.

Please read the manual to fully understand the STi-R's operation and features.

AutoMute
STi-R's patented AutoMute automatically reduces the volume level of the audio alert after a brief period. If you prefer, you can turn AutoMute off. *Page 10*

Programming
You can also easily change 7 features for your preferences. *Pages 12-14*

Power-on LED Indicator

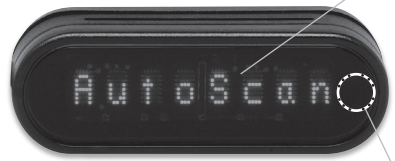
Control Module

Power
Press the PWR button to turn the STi-R on or off.

VOL/MUTE Button
Press and hold the VOL/MUTE button to adjust the alert volume level.

Briefly press this button to silence the audio for a specific alert. (The audio will alert you to the next encounter.) *Page 6*

Sensitivity Button (SENS)
Switches between Highway, AutoScan, City and City NoX settings. In general, we recommend the AutoScan mode. *Page 7*



Display Module

Alphanumeric Display
The STi-R's display will show Highway, AutoScan, City, or City NoX as its power-on indication. If you prefer, you can choose other power-on indications. *Pages 10-12*

During an alert, the display will indicate the radar or laser band, and a precise bar graph of signal strength. *Pages 8 and 13*

NOTE: In the Dark Mode the display will not light during an alert. *Pages 7, 14*

Photocell Light Sensor
The light sensor automatically increases or decreases the display brightness based on the ambient light in the vehicle's interior.

Power
To turn STi-R on or off, press the PWR button located on the front left side of the controller. When you turn STi-R on, it goes through a sequence of alerts.

If you prefer, you may program your STi-R for a shorter power-on sequence. See the Programming section for details.

Volume
Press and hold the VOL/MUTE button located in the center of the controller to adjust the STi-R's alert volume level. The audio will ramp up and down, accompanied by a bar-graph on the display. Once you've reached your preferred audio level, simply release the button.

To change the direction of the audio ramping (down instead of up or vice versa) simply release the VOL/MUTE button quickly press and hold it again to change its direction.

Power-on indication
After STi-R's start-up sequence is complete, the alphanumeric display will show Highway, AutoScan, City or City NoX to indicate which sensitivity mode is selected.

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

Voice Alerts
The STi-R provides digital voice announcements (factory default) for alerts.

If you prefer, you can turn off the voice announcement feature and have the STi-R provide audible tones without the voice announcement. See programming section for details.

AutoMute
Your STi-R has our patented AutoMute feature. After STi-R alerts you to a radar encounter at the volume you have selected, the AutoMute feature will automatically reduce 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 Programming section for details.

Mute
The VOL/MUTE button, located in the center of the STi-R's front panel, allows you to silence the audio alert during a radar encounter.

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

Sensitivity Button (SENS)
The "SENS" button selects the STi-R's sensitivity mode. We recommend AutoScan mode for most driving.

Highway Mode (Highway)
In this setting, the STi-R will detect all signals at maximum range.

AutoScan Mode (AutoScan)
In this setting the STi-R's internal computer continuously analyzes all incoming signals and intelligently filters out unwanted X and K-band false alarms from automatic door openers and motion sensors. Full sensitivity is maintained on all other bands.

City (City STD)
In this setting, X and K-band sensitivity is further reduced to eliminate unwanted false alarms in congested urban areas.

City NoX (City NoX)
In this setting, K-band sensitivity is the same as City STD, however, X-band is completely turned off.

WARNING: Do not use the STi-R City NoX mode unless you are absolutely certain that there are no traffic radar guns using X-band in your area.

Brightness
The STi-R's brightness is controlled by a sensor located behind the display lens. This sensor will automatically adjust the display based on the ambient light in your vehicle. If you prefer, you can select a fixed brightness level, including Full Dark Mode. See the programming section for details.

Audible Alerts

For Radar signals:

The STi-R uses a geiger-counter-like sound to indicate the signal strength and type of radar signal being encountered. When you encounter radar, a distinct audible alert will sound and occur faster as the signal gets stronger. This allows you to judge the distance from the signal source without taking your eyes from the road.

X-band = chirping
K-band = buzzing
Ka-band = double-chirp
Laser = rapid fire chirping
SWS = double buzz
POP = full double-chirp

For Laser signals:

Since laser signals are a possible threat no matter how weak, the STi-R alerts you to these bands at full signal strength.

For Safety signals:

The STi-R 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 21.

For POP signals:

Since POP signals are extremely fast K or Ka bursts, and a possible threat no matter how weak, the STi-R alerts you to these bands at full signal strength.

Signal Strength Meter

The STi-R's alphanumeric display consists of 280 individual LEDs, to provide an intuitive ultra-bright display of signal strength and text messages.

The STi-R's standard bar-graph signal strength meter displays band identification on a single radar signal. If there are multiple signals present, STi-R's internal computer determines which is the most important threat to show on the bar-graph meter.

When STi detects radar, it displays the band (X, K, Ka), and a precise bar-graph of the signal strength. When the STi-R detects a laser signal, the display will show "LASER." When it detects a POP signal, the display will show "POP."

NOTE: If you are operating the STi-R in the Dark mode, the display will not display anything when a signal is detected. Only the audio will be heard.

Threat Display

Your STi-R's Threat Display option is an advanced display for experienced detector users. Please use the STi-R for a few weeks to get familiar with its other features before using Threat Display.

To use the Threat Display instead of the bar graph signal strength meter, you must select Threat Display in the STi-R's Programming (see pages 10-14).

The STi-R's Threat Display simultaneously tracks multiple radar signals and their relative signal strength.

Threat Display 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 Threat Display is actually a miniature spectrum analyzer. It shows what band each signal is and its signal strength.

Above is the Threat Display if the STi-R was detecting a strong Ka-band, a weak K-band, and a weak X-band signal.

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

Here Threat Display shows a strong K-band signal, and a weak X-band signal.

Here Threat Display shows a weak Ka-band signal, and a strong X-band signal.

Threat Display 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.

Tech Display

The STi-R's Tech Display option is for the experienced detector user. In this mode, the STi-R will display the actual numeric frequency of the radar signal being received.

Tech Display shows one K-band signal at 24.150 gigahertz.

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

Programming

There are 7 user-selectable options so you can customize your STi-R for your own preferences. The buttons labeled VOL/MUTE and SENS are also used to enter the Programming Mode, REVIEW your current program settings, and to CHANGE any settings as desired. Pages 12-14 explain each option in more detail.

How to use Programming

1 To enter Program Mode, press and hold both the VOL/MUTE and SENS buttons down for 2 seconds. (The unit will beep twice, and will display the word Program).

2 Then press the VOL/MUTE 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 SENS 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 the Program Mode, simply wait 8 seconds without pressing any button, or press the PWR button. (The unit will display Complete, beep 4 times, and return to normal operation).

An example

Here is how you would turn STi-R's AutoMute feature off.

1 Enter the Program Mode by holding both the VOL/MUTE and SENS buttons down for 2 seconds. *The STi-R will beep twice and display* Program.

2 Then hold the VOL/MUTE button down. *The STi-R will scroll through the categories, starting with Pilot (*Pilot*), Voice (*Voice*), Power-on sequence (*PwrOn*), Signal Strength Meter (*Meter*), AutoMute (*aMute*), Brightness (*Brt*), and Bands (*Bands*).*

3 Release the VOL/MUTE button when the STi-R shows the AutoMute item. *Since the factory setting is for AutoMute to be on, STi-R will display* aMute ON.

If you accidentally don't release the VOL/MUTE button in time, and STi-R goes to the next category, simply hold the VOL/MUTE button down again, the STi-R will scroll through all of the categories.

4 Press the SENS button to change from aMute ON to aMute OFF.

5 To complete the Programming, simply wait 8 seconds without pressing any button, or press the PWR button. *The STi-R will display* Complete, *beep 4 times, and return to normal operation.*

Overview of Programming

***Factory Default Settings**
To reset STi-R to its original factory settings, press and hold the "VOL/MUTE" and "SENS" buttons while turning the power on. The STi-R's display will provide a Reset message, accompanied by an audible alert, acknowledging the reset.

Press the VOL/MUTE button to go from one category to the next → **Press the SENS button to change your setting within a category**

PILOT (Power-on indication)	Pilot	HWY	*Full word: Highway, AutoScan, etc.
	Pilot	H	Letter: H, A, C, or Cnx
	Pilot	V	Vehicle voltage
VOICE	Voice	ON	*Voice alerts on
	Voice	OFF	Voice alerts off
POWER-ON SEQUENCE	PwrOn	STD	*Standard power-on sequence
	PwrOn	FST	Fast power-on sequence
SIGNAL STRENGTH METER	Meter	STD	*Standard signal strength meter
	Meter	THT	Threat Display
	Meter	TEC	Tech Display
AUTOMUTE	aMute	ON	*AutoMute on
	aMute	OFF	AutoMute off
BRIGHTNESS	Brt	Auto	*Automatic brightness
	Brt	Min	Minimum brightness
	Brt	Med	Medium brightness
	Brt	Max	Maximum brightness
	Brt	Dark	All dark
BANDS	Bands	DFT	*Factory default settings
	Bands	MOD	Factory default settings modified

When KaSW is off, each Ka segment can be turned on or off

Ka1	(33.392 - 33.704)	ON *or* OFF
Ka2	(33.704 - 33.896)	ON *or* OFF
Ka3	(33.886 - 34.198)	ON *or* OFF
Ka4	(34.184 - 34.592)	ON *or* OFF
Ka5	(34.592 - 34.808)	ON *or* OFF
Ka6	(34.806 - 35.166)	ON *or* OFF
Ka7	(34.143 - 35.383)	ON *or* OFF
Ka8	(35.378 - 35.618)	ON *or* OFF
Ka9	(35.595 - 35.835)	ON *or* OFF
Ka10	(35.830 - 35.998)	ON *or* OFF

Turn bands "ON" or "OFF" by pressing and holding the "SENS" button

X	ON *or* OFF	*(default is on)*
K	ON *or* OFF	*(default is on)*
KaSW	ON *or* OFF	*(default is on)*
LSR	ON *or* OFF	*(default is on)*
SWS	ON *or* OFF	*(default is off)*
POP	ON *or* OFF	*(default is off)*
RDR	ON *or* OFF	*(default is on)*

Pilot (Power-on indication)

Pilot HWY (Full description)
In this setting, the STi-R will display "Highway," "AutoScan," "City," or "CityNox" as its power-on indication. (factory default)

Pilot H (Letter)
In this setting, the STi-R will display "H" for Highway, "A" for AutoScan,"C" for City, and "Cnx" for City NoX.

Pilot V (Vehicle voltage)
In this setting, the STi-R will continually display "H" for Highway, A" for AutoScan,"C" for City, and "Cnx" for City NoX, and the vehicle's voltage.

NOTE: A high or low voltage warning is given any time the vehicle's voltage drops below 10.5 volts, or goes above 16.5 volts. This feature is always on, regardless of the Pilot setting.

Voice

Voice On (Voice announcements on)
In this setting, all radar, laser, and SWS messages (if programmed) will be announced using a digital voice.

Voice Off (Voice announcements off)
In this setting, only the distinct audio tone will be heard when a radar, Laser, or SWS message is detected.

Power-on Sequence

PwrOnSTD (Standard)
In this setting, each time you turn on the STi-R, it will display "Bel STi-R," "LASER," "Ka-band," "K-band," "X-band," followed by a brief SWS alert. (factory default)

If any of the factory default bands have been disabled, a double X-band tone and corresponding message (i.e. "X OFF"), will alert you that one or more bands have been turned off.

PwrOnFST (Fast power-on)
In this setting, the STi-R will provide a single X-band tone if the factory default settings have not been changed. If any of the factory default band settings have been disabled, a double X-band tone and corresponding message (i.e. "X OFF"), will alert you that one or more bands have been turned off.

Signal Strength Meter

MeterSTD (Standard meter)
In this setting, the meter displays the band of the received signal, and a bar graph shows the relative signal strength. (factory default)

MeterTHT (Threat Display)
In this setting, the meter will simultaneously track multiple radar signals, including relative signal strength for each.

MeterTEC (Tech Display meter)
In this setting, the meter displays the actual numeric frequency of the radar signal received.

NOTE: The Tech Display feature is explained in more detail on page 9.

AutoMute

aMute ON (AutoMute on)
In this setting, the STi-R's audio alerts will initially be at the volume you set, but after a few seconds, the STi-R will automatically reduce the volume level, to keep you informed, but not annoyed. (factory default)

aMuteOFF (AutoMute off)
With AutoMute off, the STi-R's audio alerts will remain at the volume you set for the duration of the radar encounter.

Brightness

BrtAuto

In this setting, the brightness for the display is controlled automatically by a sensor that measures the ambient light in the vehicle. Sunlight will increase the brightness level, while dim or no light (night driving) will decrease the brightness.

BrtMin

In this setting, the display is set to a minimum light level. This setting is retained in memory even if the power is turned off.

BrtMed

In this setting, the display is set to a medium light level. This setting is retained in memory even if the power is turned off.

BrtMax

In this setting, the display is set to a maximum light level. This setting is retained in memory even if the power is turned off.

BrtDark

In this setting, the display will be totally dark.

Bands

BandsDFT

In this setting, the factory default settings for radar and laser are monitored.

This is the factory setting, and it is highly recommended that you use your STi-R in this mode.

BandsMOD

In this setting, STi-R will warn you with an audible alert, and associated text message stating which band has changed from the original factory setting (i.e. "SWS ON"). This warning is displayed during the start up sequence (standard or fast).

KaSW

When Superwide Ka-band is turned off, each segment within Ka-band can be turned on/off individually. This is particually useful in areas where only certain sections of Ka-band are used.

RDR

When Radar Detection Rejection is on (default), polluting radar detectors are rejected. When RDR is turned off, increasing will occur due to other radar detectors.

WARNING: Do not turn off a band unless you are absolutely certain that there are no traffic radar guns using that specific band in your area.

Features and Specifications

Operating Bands
- X-band 10.525 GHz ±25 MHz
- K-band 24.150 GHz ±100 MHz
- Ka-band 34.700 GHz ±1300 MHz
- Laser 904nm, ±33nm

Radar Receiver
- Dual-Horn Antenna Casting
- Superheterodyne, dual LNA's
- Scanning Frequency Discriminator
- Digital Signal Processing (DSP)

Laser Detection
- Quantum Limited Video Receiver
- (5) Optical Laser Sensors

Display Type
- 280 LED Alphanumeric
- Bar Graph, Threat Display™ or Tech Display™
- Automatic, plus 4 levels of fixed brightness including full Dark

Power Requirement
- 12VDC, Negative Ground

Programmable Features
- Power-On Indication
- Voice Alerts
- Power-On Sequence
- Signal Strength Meter
- AutoMute
- Display Brightness
- Bands

Sensitivity Control
- AutoScan
- Highway
- City
- CityNoX

Additional Patented Technology
- Auto Calibration Circuitry
- Mute/AutoMute™/SmartMute™
- TotalShield™ Technology

Patented Technology

STi-R is covered by one or more of the following:

U.S. patents

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 the STi-R 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 STi-R and how to interpret what it tells you. The specific type of radar being used, the type of transmission (continuous or instant-on) and the location of the radar source affect the radar alerts you receive.

The following examples will give you an introduction to understanding the STi-R's warning system for radar, laser and safety alerts.

Alert	Explanation
The STi-R begins to sound slowly, then the rate of alert increases. The Signal Meter ramps accordingly.	You are approaching a continuous radar source aimed in your direction.
STi-R emits short alerts for a few seconds and then falls silent only to briefly alert and fall silent again.	An instant-on radar source is being used ahead of you and out of your view.
STi-R suddenly sounds a continuous tone for the appropriate band received. All segments in the Signal Strength Meter are lit.	An instant-on radar source or laser source is being used nearby. This kind of alert requires immediate attention!
A brief laser alert.	Laser is being used in the area. Because laser is inherently difficult to detect, any laser alert may indicate a source very close by.
STi-R receives weak signals. These signals may be a little stronger as you pass large, roadside objects. The signals increase in frequency.	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.

Alert	Explanation
STi-R alerts slowly for a while and then abruptly jumps to a strong alert.	You are approaching a radar unit concealed by a hill or an obstructed curve.
STi-R alerts intermittently. Rate and strength of alerts may be consistent or vary wildly.	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.
STi-R 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.
STi-R gives an X-band or K-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

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.

Because intrusion alarms and motion sensors often operate on the same frequency as X-Band or K-band radar, your STi-R will occasionally receive non-police radar signals. Since these 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 STi-R'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).

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.**

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 TotalShield™ Technology Works

Beltronic's TotalShield Technology keeps RF signals from radiating from the detector. Unlike other radar and laser detectors, which merely move their RF signals (local oscillators) to another frequency (which will be detectable by future detector-detectors), this revolutionary design keeps you unseen by current radar detector-detectors, including VG-2 and Spectre. This unique design will also keep you unseen from any future radar detector detectors as well.

Although the BELTRONICS STi-R is a completely undetectable radar, laser and safety detector, driving techniques and reactions to alerts can still draw unwanted attention. Here are a few examples:

1. Hitting the brakes immediately when the STi-R provides an alert can broadcast use of a detector.

2. Traveling at night with a glow from a radar detector's display visible from outside your vehicle can also draw unwanted attention. The STi-R offers adjustable brightness, including a full dark mode which will provide audio alerts, but no visual indication.

How Safety Radar Works

Safety Warning System, or SWS, uses a modified K-band radar signal. The SWS safety radar system has 64 possible messages (60 currently allocated). The SWS messages your STi-R can display are listed on the facing page.

From the factory, your STi-R is programmed with SWS decoding OFF. If you wish to detect this system, use the Programming feature to turn STi-R's SWS decoding ON.

NOTE: Some of the safety messages have been condensed, so that each message can be displayed on one or two screens on STi-R'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. Do not be surprised if you encounter emergency vehicles, road hazards and railroad crossings that are unequipped with these transmitters. If Safety transmitters become more prevalent, these Safety radar signals will become more common.

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 *Future use*
13 Stationary Police Vehicle Ahead

Highway Hazard Zone Advisory

14 Train Approaching/At Crossing
15 Low Overpass Ahead
16 Drawbridge Up
17 Observe Bridge 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 *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 Blowing Snow Whiteout Ahead
42 *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 *Future use*

Fast/Slow Moving Vehicles

61 Emergency Vehicle In Transit
62 Police In Persuit
63 Oversize Vehicle In Transit
64 Slow Moving Vehicle

Troubleshooting

Problem	Possible Cause
STi-R beeps briefly at the same location every day, but no radar source is in sight.	• An X-band or K-band motion sensor or intrusion alarm is located within range of your route. With time, you will learn predictable patterns of these signals.
STi-R does not seem sensitive to radar or laser.	• STi-R may be in City Mode.
STi-R did not alert when a police car was in view.	• 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.
STi-R did not provide a Safety signal while within range of an emergency vehicle.	• Safety transmitters may not be commonly used in your area.
STi-R's display is not working.	• Check programming to be sure the STi-R is not in Dark Mode.
STi-R's audible alerts are less loud after the first few alerts.	• STi-R is in AutoMute Mode. See page 6 for details.
STi-R's power-on sequence reoccurs while you are driving.	• A loose power connection can cause STi-R to be briefly disconnected.

Problem	Possible Cause
STi-R will not turn on.	• Check the PWR is on. • Check that vehicle ignition is ON.
Your 14-year old son has changed all 7 of the Programming options.	• You can return all of the programming options to the factory defaults by holding down the VOL/MUTE and SENS buttons while you turn the STi-R on.

Explanation of Displays

No display	STi-R is in the Dark mode (pages 7, 14)
PilotHWY	One of the many programming messages (pages 10-14)
WorkZone	One of the many Safety Radar messages (pages 20-21)
Caution	STi-R has detected a Safety Radar Signal, but the signal isn't yet strong enough to decode the specific safety message (pages 20-21)
Service Required	STi-R has failed the calibration test. Contact Beltronics for repair

Service

Service Procedure

If your STi-R 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.

Parts

Replacement parts are available from your installing dealer.

Warranty

BELTRONICS One Year Limited Warranty

BELTRONICS warrants your STi-R 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 BELTRONICS under this Warranty is limited to either repair or, at the option of BELTRONICS, replacement of the STi-R 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. BELTRONICS is not liable for any incidental or consequential damages arising from the use, misuse, installation, or mounting of the STi-R. 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 STi-R has been removed, or if your STi-R has been subjected to physical abuse, improper installation, or modification.

Register online: @ www.beltronics.com

Remove card along perforations

BELTRONICS PRODUCT REGISTRATION CARD

BELTRONICS®

- If you purchased your detector directly from BELTRONICS, you do not need to fill this out.
- If you did not purchase your detector directly from BELTRONICS, please fill out this section and return to us, or register online at our web address: **www.beltronics.com**.

1. First Name_____ Middle Initial____ Last Name_____

   Address_____

   City_____ State_____ ZIP_____

   Phone Number (In case we have a question)_____
2. Product Purchased **BELTRONICS STi-R** Serial Number_____
3. Place of Purchase_____ Date_____ Price_____
4. Primary reason for purchasing this BELTRONICS product_____

   _____

   _____

▼ *Remove card along perforations* ▼

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