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PERFORMANCE RULES.™

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2007 NELTRONICS
Designed and Manufactured in Canada
Feature, specifications and prices subject to change without notice.
Model: XR70

BELTRONICS™

PERFORMANCE RULES.™

Designed for optimum Aus / NZ performance

XR70

Highway

XR70

SAFETY RADAR AND LASER DETECTOR

Owner's Manual

1KM WARNING OF ROAD HAZARDS

Congratulations

The Bel XR70 is one of the most advanced Radar Safety Detectors ever designed by Beltronics.

The Bel XR70 includes:
- Full K, Superwide Ka & Ku radar capability
- Safety Warning System
- Front & rear laster detection
- Varactor-tuned (VTO) microwave receiver
- Digital Signal Processing (DSP) for superior range and reduced false alarms
- Patented mute and AutoMute
- Audible and visual band alerts and all the performance you'd expect from Beltronics.

In addition, the Bel XR70 introduces the following revolutionary features:

- Varactor-tuned receiver provides long-range protection against all radar threats
- New easy-to-use Programming lets you customize up to 7 features
- New AutoScan mode intelligently reduces unwanted false alarms, plus Highway and City settings

- Ultra-bright text-display provides easy to read information from any angle
- New Tech Display provides actual numeric radar frequency for any radar signal
- New Programmable Bands (on/off), including Ku-band for European travel.
- Detects and decodes Safety Warning System messages

If this is your first Radar Safety Detector, please read the manual in detail to get the most out of your XR70's outstanding performance and innovative features.

Please Stay Alert
Don't Speed
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 XR70 Quick Reference Card

There are 7 user-selectable options so you can customize your XR70 for your own preferences.

The buttons labeled CITY and BRT are also used to enter the Program Mode, REVIEW your current program settings, and to CHANGE any settings as desired. The words PROGRAM, RVW and CHG are located on the top of the detector, and are highlighted in graphics.

How to use Programming
1 To enter Program Mode, press and hold both CITY and BRT buttons down for 2 seconds. (The unit will beep twice, and will display the word "Program").

2 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).

3 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).

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

Factory Default Settings
To reset XR70 to its original factory settings, press and hold the "CITY" and "BRT" buttons while turning the power on. XR70's display will provide a "Reset" message, accompanied by an audible alert, acknowledging the reset.

An example
Here is how you would turn XR70's AutoMute feature off.

1 Enter the Program Mode by holding both the CITY and BRT buttons down for 2 seconds. XR70 will beep twice and display Program.

2 Then hold the RVW button down. XR70 *will scroll through the categories, starting with Display (*Pilot*), then Voice (*Voice*), then Power-On sequence (*PwrOn*), then Signal Strength Meter (*Meter*), and then AutoMute (*aMute*).*

3 Release the RVW button when XR70 shows the AutoMute item. *Since the factory setting is for AutoMute to be on, XR70 will display* aMute ON.

(If you accidentally don't release the Review button in time, and XR70 goes to the next category, hold the RVW button down again, and after XR70 scrolls through all categories, it will begin again at the top of the list.)

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

5 To complete the Programming, simply wait 8 seconds without pressing any button. *The XR70 will display* Complete, *beep 4 times, and return to normal operation.*

Programming Details ▶

Remove card along perforations

Quick Reference Card

▼ *Remove card along perforations* ▼

BELTRONICS XR70 Quick Reference Card

Press the <u>RVW</u> button to go from one category to the next		Press the <u>CHG</u> button to change your setting within a category
PILOT (Power-on indication)	Pilot HWY Pilot H Pilot V	*Full word: Highway or AutoScan or City Letter: H or A or C Vehicle voltage
VOICE	Voice ON Voice OFF	*Voice alerts on Voice alerts off
POWER-ON SEQUENCE	PwrOn STD PwrOn FST	*Standard power-on sequence Fast power-on sequence
SIGNAL STRENGTH METER	Meter STD Meter TEC	*Standard signal strength meter Tech Display
AUTOMUTE	aMute ON aMute OFF	*AutoMute on AutoMute off
CITY MODE SENSITIVITY	City STD City LoX City NoX	*Standard City mode sensitivity No X band in XR70 No X band in XR70
BANDS	Bands ALL Bands MOD	*All bands enabled One or more bands are disabled

Turn bands "ON" or "OFF" by pressing the VOLUME/MUTE button

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

* Factory Default Settings

Remove card along perforations

Table of Contents

Quick Reference Guide

To begin using your XR70, just follow these simple steps

1 Plug the small end of the power cord into the side jack of the Safety Radar Detector, and plug the large end of the power cord into your car's lighter socket.

2 Mount your XR70 on the windshield using the supplied windshield mount.

3 Press the PWR button, located top left, to turn the XR70 on.

4 Press and hold the Volume/Mute button to adjust the volume.

Please read the manual to fully understand XR70's operation and features.

QuickMount Slot
Insert XR70's adjustable Windshield mount into this slot. *Page 7*

QuickMount Button
Press the button, and slide the Windshield mount into one of its four locking positions. *Page 7*

City Button
Switches between AutoScan, City and Highway, settings. In general, we recommend Highway. *Page 9*

Power
Press the PWR button to turn the XR70 on or off.

Volume
Press and hold the Volume/Mute button to adjust the alert volume level. *Page 8*

AutoMute
XR70'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 8*

Programming
XR70 is ready to go, just plug it in and turn it on. But you can also easily change 7 features for your preferences. *Page 12-16*
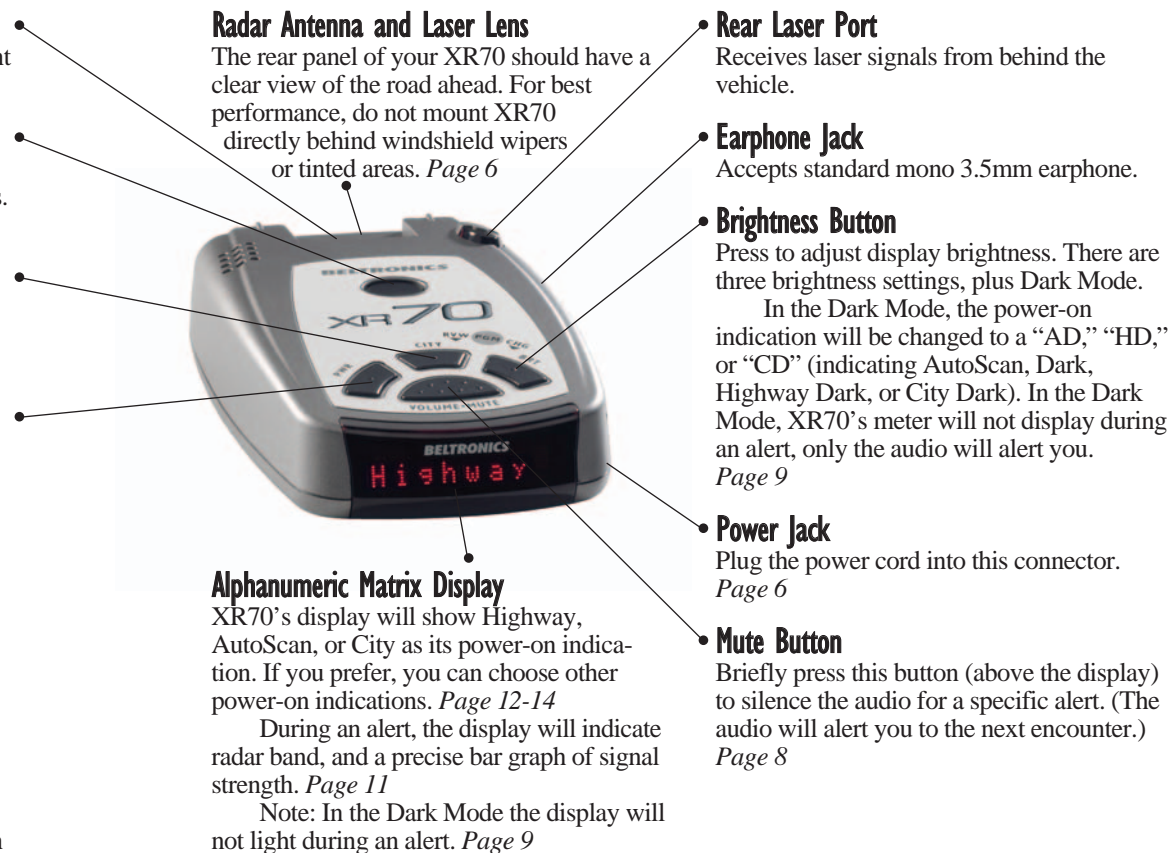
Radar Antenna and Laser Lens
The rear panel of your XR70 should have a clear view of the road ahead. For best performance, do not mount XR70 directly behind windshield wipers or tinted areas. *Page 6*

Alphanumeric Matrix Display
XR70's display will show Highway, AutoScan, or City as its power-on indication. If you prefer, you can choose other power-on indications. *Page 12-14*

   During an alert, the display will indicate radar band, and a precise bar graph of signal strength. *Page 11*

   Note: In the Dark Mode the display will not light during an alert. *Page 9*

Rear Laser Port
Receives laser signals from behind the vehicle.

Earphone Jack
Accepts standard mono 3.5mm earphone.

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

   In the Dark Mode, the power-on indication will be changed to a "AD," "HD," or "CD" (indicating AutoScan, Dark, Highway Dark, or City Dark). In the Dark Mode, XR70's meter will not display during an alert, only the audio will alert you. *Page 9*

Power Jack
Plug the power cord into this connector. *Page 6*

Mute Button
Briefly press this button (above the display) to silence the audio for a specific alert. (The audio will alert you to the next encounter.) *Page 8*

Installation

Power Connection

To power XR70, plug the small end of the SmartPlug, (telephone-type connector) into the modular jack on XR70's right side, and plug the lighter plug adapter into your vehicle's lighter socket or accessory socket.

XR70 operates on 12 volts DC negative ground only. The lighter plug provided is a standard size and will work in most vehicles. Of course, your lighter socket must be clean and properly connected for proper operation.

Note: Depending on your vehicle, the lighter socket power may either be continuously on, or it may be switched on and off with your ignition switch.

Optional power cords
See the Accessories section for details on our optional Direct-wire SmartPlug.

Mounting Location

WARNING: BELTRONICS cannot antici-pate the many ways the XR70 can be mounted.

It is important that you mount XR70 where it will not impair your view nor present a hazard in case of an accident.

Where to mount XR70
For optimum detection performance, we recommend the following:

• Mount XR70 away from windshield wipers, other solid objects, and heavily tinted areas that might obstruct the radar antenna or laser lens.

• The XR70 can also be used with the optional under cover sunvisor holder. *Page 29.*

Windshield QuickMount

XR70's QuickMount bracket is designed for unobtrusive and hassle-free mounting.

1   Depress the QuickMount button on the top of XR70 (by the word BELTRONICS) and slide the QuickMount bracket into the slot until it is locked into the position which best fits the angle of your windshield (there are four settings available). For extremely horizontal or extremely sloped windshields, the QuickMount bracket can be bent.

To ensure that the suction cups adhere to the windshield firmly, be sure to keep both your windshield and the suction cups clean.

2   To adjust XR70 on your windshield, use the QuickMount adjustment button located on the top of the XR70, and slide XR70 forward or backward to obtain a level horizontal position.

When installed and adjusted properly, the back top edge of the XR70 should rest solidly against your windshield.

Caution!
A few vehicles (including some Porsches) have windshields with a soft anti-lacerative coating on the inside surface. Use of suction cups will permanently mar this coating. Consult your dealership or the vehicle owner's manual to determine if your wind-shield has this coating.

Templates!
Excessive heat (over 60º C) can damage your Safety Detector. Do not leave it on the dash or windscreen, in direct sunlight, or in a unventilated vehicle when not in use.
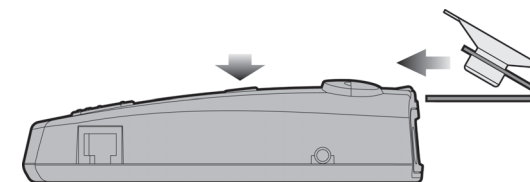
User's Tip
You can leave the QuickMount bracket in place on your windshield, and easily remove the XR70 by pressing the adjustment button and sliding XR70 off the mount. Again, be sure to position the bracket where it won't present a hazard in the event of an accident. Additional mounts are available.

Controls and Features

Power
To turn XR70 on or off, press the PWR button located on the top. When you turn XR70 on, it goes through a sequence of alerts.

If you prefer, you may program your XR70 for a shorter power-on sequence. See the Programming section for details.

Volume
Press and hold the Volume/Mute button located on the top case to adjust the XR70'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.

Power-on indication
After XR70's start-up sequence is complete, the alphanumeric display will show Highway, AutoScan, or City 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 XR70 provides digital voice announcements of radar and laser bands detected. As Safety Radar (SWS) is turned on, a safety radar message will also be announced. See the Programming section for details.

If you prefer, you can select turn Voice Alerts off. See the Programming section for details.

AutoMute
Your XR70 has our patented AutoMute feature. After XR70 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 Mute button, located on XR70's top case, allows you to silence the audio alert during a radar encounter.

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

Highway / AutoScan / City Button
The City button selects XR70's sensitivity mode. We recommend the Highway mode for most driving.

• Highway Mode maintains full sensitivity on all selected bands. Giving the greatest range.

• AutoScan mode provides long-range warning, with minimum false alarms. In this mode, XR70's internal computer continuously analyzes all incoming signals and intelligently filters out false alarms.

• City Mode only affects X band enabled detectors, so is therefore redundant on the XR70.

Brightness
XR70's BRT button selects the brightness of XR70's display. There are four settings: Maximum, Medium, Minimum, and Dark. Press the BRT button to select your preferred brightness.

If you prefer, you can have XR70 always turn on at a specific brightness. See the Programming section for details.

Dark Mode
When you select the Dark mode with the BRT switch, XR70 changes to a very inconspicuous power-on indication: a very Dim AD, HD, or CD. (In this display, the A, H, or C indicates Auto, Highway, or City, and the D indicates Dark.)

When XR70 is in the Dark mode, the display will not show visual alerts when XR70 detects signals. Only the audible alert will tell you of detected signals.

If you prefer, you can have XR70's display totally dark (see the Programming section).

Controls and Features

Audible Alerts

For Radar signals:

XR70 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.

Each band has a distinct tone for easy identification.

K-band = buzzing
Ka-band = double-chirp
Ku-band = high pitched buzzing

For Laser signals:

Since laser is a possible threat no matter how weak, the XR70 alerts you to these bands at full strength.

For Safety signals:

XR70 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.

Power Connector

XR70's power jack uses a telephone-type connector. This new 6-pin connector only works with the included coiled SmartPlug, or the optional Direct-wire SmartPlug.

The coiled SmartPlug is a special power cord that has a power-on indicator (which only lights up when the XR70 is turned on), a bright alert light that warns of radar or laser, and a convenient mute button right on the plug. It's perfect for any car where reaching the detector's mute button on the windshield is a stretch.

For discreet night driving, put XR70 in the Dark mode, and use the SmartPlug for your visual alerts. Other drivers won't know you have a detector.

An optional Direct-wire SmartPlug is also available. This version includes a small display module, which can be wired directly into your electrical system, with a 3 metre straight cord to route to your XR70.

Signal Strength Meter

XR70's alphanumeric display consists of 280 individual LEDs, to provide an intuitive ultra-bright display of signal strength and text messages.

XR70's standard bar-graph signal strength meter only displays information on a single radar signal. If there are multiple signals present, XR70's internal computer determines which is the most important threat to show on the bar-graph meter.

When XR70 detects radar, it displays the band (K, or Ka), and a precise bar-graph of the signal strength. When XR70 detects a laser signal, the display will show "LASER."

NOTE: If you are operating XR70 in the Dark mode, the display will not light when a signal is detected, only the audio will be heard.

Tech Display

Bel XR70's new Tech Display option is for the experienced detector user. In this mode, XR70 will display the actual numeric frequency of the radar signal being received.

K 24.150

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

Programming

There are 7 user-selectable options so you can customize your XR70 for your own preferences. The buttons labeled CITY and BRT 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 on the top of the detector, and are highlighted in colored graphics. Pages 14-16 explain each option in more detail.

How to use Programming

1   To enter Program Mode, press and hold both the CITY and BRT buttons down for 2 seconds. (The unit will beep twice, and will display the word `Program`).

2   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).

3   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).

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 XR70's AutoMute feature off.

1   Enter the Program Mode by holding both the CITY and BRT buttons down for 2 seconds. XR70 *will beep twice and display* `Program`.

2   Then hold the RVW button down. XR70 *will scroll through the categories, starting with Pilot* (`Pilot`), *Voice* (`Voice`), *Power-on sequence* (`PwrOn`), *Signal strength meter* (`Meter`), *and then AutoMute* (`aMute`).

3   Release the RVW button when XR70 shows the AutoMute item. *Since the factory setting is for AutoMute to be on, XR70 will display* `aMute On`.
    (If you accidentally don't release the RVW button in time, and XR70 goes to the next category, hold the RVW button down again, and after XR70 scrolls through all categories, it will begin again at the top of the list.)

4   Press the CHG 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 XR70 will display* `Complete`, *beep 4 times, and return to normal operation.*

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Overview of Programming

Press the CHANGE button to change your setting within a category

PILOT (Power-on indication)	`Pilot HWY` `Pilot H` `Pilot V`	*Full word: Highway or AutoScan or City Letter: H or A or C Vehicle voltage
VOICE	`Voice ON` `Voice OFF`	*Voice alerts on Voice alerts off
POWER-ON SEQUENCE	`PwrOn STD` `PwrOn FST`	*Standard power-on sequence Fast power-on sequence
SIGNAL STRENGTH METER	`Meter STD` `Meter TEC`	*Standard signal strength meter Tech Display
AUTOMUTE	`aMute ON` `aMute OFF`	*AutoMute on AutoMute off
CITY MODE SENSITIVITY	`City STD` `City LoX` `City NoX`	*Standard City mode sensitivity No X band in XR70 No X band in XR70
BANDS	`Bands ALL` `Bands MOD`	*All bands enabled One or more bands are disabled

* Factory Default Settings
To reset XR70 to its original factory settings, press and hold the "CITY" and "BRT" buttons while turning the power on. XR70's display will provide a "Reset" message, accompanied by an audible alert, acknowledging the reset.

Turn bands "ON" or "OFF" by pressing the VOLUME/MUTE button

`K`	`ON`	`or OFF`	*(default is on)*
`Ka`	`ON`	`or OFF`	*(default is on)*
`POP`	`ON`	`or OFF`	*(default is off)*
`Ku`	`ON`	`or OFF`	*(default is off)*
`LSR`	`ON`	`or OFF`	*(default is on)*
`SWS`	`ON`	`or OFF`	*(default is on)*

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Details of Programming

Pilot (Power-on indication)
Note: When you are using the Dark mode, the display will only show HD, AD, or CD, (Highway-Dark, AutoScan-Dark, or City-Dark).

<u>Pilot Hwy</u> (Full description)
In this setting, XR70 will display "Highway," "City," or "AutoScan" as its power-on indication. (factory default)

<u>Pilot H</u>(Letter)
In this setting, XR70 will display "H" for Highway, "C" for City, and "A" for AutoScan.

<u>Pilot V</u> (Vehicle voltage)
In this setting, XR70 will continually display "H" for Highway, "C" for City, and "A" for AutoScan, and the vehicle's voltage. If the vehicle's voltage drops below 10.5 volts, a low voltage warning is displayed, followed by an audible alert. A high voltage warning is also given if the voltage goes above 16.0 volts. The high-voltage warning is also followed by an audible alert.

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

<u>Voice Off</u> (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
<u>PwrOnSTD</u> (Standard)
In this setting, each time you turn on XR70, it will display "Laser," "Ka-band," "K-band," "X-band" followed by a brief alert.
    If any bands have been changed from the factory default settings, a double tone and corresponding message (i.e. "K OFF"), will alert you that one or more bands have been changed.

<u>PwrOnFST</u>(Fast power-on)
In this setting, XR70 will provide a single tone. If any bands have been changed from the factory default settings, a double tone and corresponding message (i.e. "K OFF"), will alert you that one or more bands have been changed.

Signal Strength Meter
<u>MeterSTD</u> (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)

<u>MeterTEC</u> (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 11.

AutoMute
<u>aMute ON</u> (AutoMute on)
In this setting, XR70's audio alerts will initially be at the volume you set, but after a few seconds, XR70 will automatically reduce the volume level, to keep you informed, but not annoyed. (factory default)

<u>aMute OFF</u> (AutoMute off)
With AutoMute off, XR70's audio alerts will remain at the volume you set for the duration of the radar encounter.

City Mode Sensitivity
<u>CitySTD</u> (Standard)
Function not used. No X band in XR70.

<u>CityLoX</u> (Low X band sensitivity)
Function not used. No X band in XR70.

<u>CityNoX</u> (No X-band sensitivity)
Function not used. No X band in XR70.

Details of Programming

Bands

BandsAll
In this setting all radar and laser frequencies are monitored.

BandsMOD
In this setting, only selected bands will be monitored. Any changes will be displayed during the start up sequence (standard or fast).

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

Technical Details

Features and Specifications

Operating Bands
• K-band 24.150 GHz ±100 MHz
• Ka-band 34.700 GHz ± 1300 MHz
• Ku-band 13.400 GHZ ± 25MHz
• Laser 904nm, 33 MHz bandwidth

Radar Receiver / Detector Type
• Superheterodyne, VTO
• Scanning Frequency Discriminator
• Digital Signal Processing (DSP)

Laser Detection
• Quantum Limited Video Receiver
• Multiple Laser Sensor Diodes

Display Type
• 280 LED Alphanumeric
• Bar Graph or Tech Display
• 3 Levels of Brightness, plus Dark Mode

Power Requirement
• 12VDC, Negative Ground
• SmartPlug (included)

Programmable Features
• Power-On Indication
• Voice Alerts
• Power-On Sequence
• Signal Strength Meter
• AutoMute
• City Mode Sensitivity
• Radar / Laser Bands

Sensitivity Control
• Highway, AutoScan and City

Auto Calibration Circuitry

Dimensions (Inches)
• 1.25 H x 2.75 W x 4.75 L

Patented Technology
XR70 is covered by one or more of the following US patents.
6,836,238 6,693,578 6,614,385 6,587,068
6,400,305 6,249,218 6,069,580 5,668,554
5,600,132 5,587,916 5,559,508 5,365,055
5,347,120 5,446,923 5,402,087 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
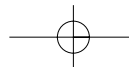D253,752

XR70 is also covered by one or more of the following Canadian patents:
2,330,964 1,295,715 1,295,714 1,187,602
1,187,586

European patent:
1,145,030
Other patents pending. Additional patents may be listed inside the product.

Technical Details

Interpreting Alerts

Although the XR70 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 XR70 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 XR70's warning system for radar, laser and safety alerts.

Alert	Explanation
The XR70 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.
XR70 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.
XR70 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.
XR70 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
XR70 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.
XR70 alerts intermittently. Rate and strength of alerts may be inconsistent 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.
XR70 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.
XR70 gives an K-band alert intermittently.	You are driving through an area populated with radar motion sensors (door openers, 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, overconfidence 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.
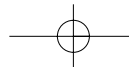
Technical Details

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 radar, your XR70 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 XR70's radar detection abilities are fully operational.

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 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.

Technical Details

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 XR70 can display are listed on the facing page.

From the factory, your XR70 is programmed with SWS decoding ON. If SWS is used in your area, your XR70 will display the safety messages associated with the signal.

NOTE: Some of the safety messages have been condensed, so that each message can be displayed on one or two screens on XR70'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. As Safety transmitters become more prevalent (the number of operating transmitters is growing every day), 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   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
XR70 beeps briefly at the same location every day, but no radar source is in sight.	• K-band motion sensor or intrusion alarm is located within range of your route. With time, you will learn predictable patterns of these signals.
XR70 does not seem sensitive to radar or laser.	• Make sure that windshield wipers do not block XR70's radar antenna and that the laser lens is not behind tinted areas. • Determine if your vehicle has an Instaclear®, ElectriClear® or solar reflective windshield which may deflect radar or laser signals. • XR70 may be in City Mode.
XR70 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.
XR70 did not provide a Safety signal while within range of an emergency vehicle.	• Safety transmitters may not be commonly used in your area.
XR70's display is not working.	• Press the BRT button to deactivate Dark Mode.
XR70's audible alerts are less loud after the first few alerts.	• XR70 is in AutoMute Mode. See page 8 for details.
XR70 bounces or sags on windshield.	• XR70 is not making contact with the windshield to provide stability. While holding down XR70's QuickMount button, slide XR70 toward the windshield so that the back top edge makes firm contact.
XR70's power-on sequence reoccurs while you are driving.	• A loose power connection or dirty lighter socket can cause XR70 to be briefly disconnected.

Problem	Solution
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 CITY and BRT buttons while you turn XR70 on.
XR70 will not turn on.	• Check that the power is ON. • Check that vehicle ignition is ON. • Check that vehicle lighter socket is functional. • Try XR70 in another vehicle.
XR70 feels very warm.	• It is normal for XR70 to feel warm.

Explanation of Displays

|	
AD	Sensitivity control is in Auto mode, display is in Dark mode (page 9)
HD	Sensitivity control is in Highway mode, display is in Dark mode (page 9)
CD	Sensitivity control is in City mode, display is in Dark mode (page 9)
No display	XR70 is in the Dark mode (page 9)
PilotHWY	One of the many programming messages (pages 12-16)
WorkZone	One of the many Safety Radar messages (pages 22-23)
Caution	XR70 has detected a Safety Radar Signal, but the signal isn't yet strong enough to decode the specific safety message (page 22-23)
Self Cal	XR70 is running a self-calibration test
Service Required	XR70 has failed the calibration test. Contact Neltronics for repair

Service

Service Procedure
If your XR70 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 local dealer. They will evaluate your unit and arrange repairs if necessary.
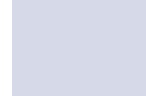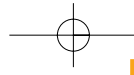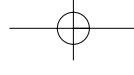
Register online: @ www.neltronics.com.au

Remove card along perforations

BELTRONICS™

PRODUCT REGISTRATION CARD

Please fill out this section and return to us,

or register online at our website: www.neltronics.com.au

1. First Name _____ Last Name _____

2. Address _____

City _____ State _____ Postcode _____

3. Email Address _____

4. Date Purchased _____ Place of Purchase _____

5. Serial Number _____ Model _____

6. Join ADRA. Australian Drivers Rights Association lobbys legislators for better driving laws and conditions including continued legal use of safety detectors. Support those that support you. (No membership fees)

Yes [ ]   No [ ] [www.adrawa.com.au]

Delivery Address:
PO Box 1469
SUBIACO WA 6904

Neltronics
Reply Paid 1469
SUBIACO WA 6904

Remove card along perforations

No stamp required
if posted in Australia

Warranty and Accessories

NELTRONICS One Year Limited Warranty

NELTRONICS warrants your XR70 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 NELTRONICS under this Warranty is limited to either repair or, at the option of NELTRONICS, replacement of the XR70 detector. There are no expressed or implied warranties, including those of fitness for a particular purpose or merchantability, which extend beyond the fact hereof.

NELTRONICS is not liable for any incidental or consequential damages arising from the use, misuse, or mounting of the XR70.

This Warranty does not apply if the serial number on the housing of the XR70 has been removed, or if your XR70 has been subjected to physical abuse, improper installation, or modification.

Accessories

The following accessories and replacement parts are available for BEL XR70.

AUSTRALIA
Coiled SmartPlug............................$69.00
Direct-wire SmartPlug....................$69.00
Windshield Mount $34.95
Undercover Sunvisor Holder $24.95

NEW ZEALAND
Coiled SmartPlug............................$79.00
Direct-wire SmartPlug....................$79.00
Windshield Mount $40.95
Undercover Sunvisor Holder $29.95