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O Manual

GPS

Pro500 Professional Series

U L T I M A T E

RADAR / LASER / SAFETY DETECTOR

Congratulations

You've just purchased the most sophisticated radar and laser detector in the world—the Beltronics Pro500.

The Pro500 delivers the best long-range warning on all radar bands including X, K, Superwide Ka, Ku and instant-on POP. Multiple front and rear laser sensors provide 360 degree laser protection, including the widest field of view.

The Beltronics Pro500's GPS-powered technology provides permanent relief from false alarms including automatic door openers, motion sensors and other radar-based sensors. And, it comes pre-loaded with thousands of red light and fixed position speed camera locations throughout North America. Data for additional countries are also available. Call or visit our web site for details.

In addition, the Pro500 introduces the following state-of-the-art performance and features:

- New web-ready access allows you to update your safety camera data and other software through our website.
- Revolutionary AutoScan mode provides real-time radar performance based on vehicle speed, plus Highway and AutoNoX settings.
- SpeedCheck feature provides an instant view of your vehicle's speed during an alert.
- Mark Location feature allows you to instantly "Mark" known speed traps, cameras and other places of interest.
- Easy-to-use Programming allows you to customize up to 8 features.
- Ultra-bright alphanumeric display with 280 LEDs.
- Exclusive Threat Display tracks multiple radar signals and their relative signal strength.
- Exclusive Tech Display provides actual numeric frequency for any radar signal.
- Selectable radar and laser bands (on/off) allow you to customize which bands are monitored.
- Selectable Markers (on/off) allow you to customize which Markers are monitored.
- Includes exclusive SmartCord for easy access to Mute and AlertLock features.

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 14-18 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'revolutionary performance and innovative features.

Please drive safely.

Quick Reference

There are 8 user-selectable options so you can customize your Pro500 for your own Programming.

The buttons labeled "MRK" and "BRT" are also used to enter the Programming Mode, REVIEW your current Programming settings, and to CHANGE any settings as desired. The words "PGM," "MRK" and "BRT" are located on the top of the detector.

How to use EZ-Programming

1 To enter Programming, press and hold the "MRK" and "BRT" buttons down for 2 seconds. The unit will beep twice, and display the word `Program`.

2 Then press the "BRT" button to review the categories. You can either tap the button to change categories, or simply hold the button down to scroll through the categories.

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

4 To exit Programming, simply wait 8 seconds without pressing any button, or press the power button. The unit will display `Complete`, beep and return to normal operation.

An example:
Here is how you would turn Pro500's AutoMute feature off:

1 Enter Programming by holding both the "MRK" and "BRT" buttons down for 2 seconds. *Pro500 will beep and display* `Program`.

2 Then hold the "BRT" button down.
The Pro500 will scroll through the categories, starting with Pilot (`Pilot`*), then SpeedCheck (*`spdck`*), then Signal Strength Meter (*`Meter`*), then AutoMute (*`aMute`*).*

3 Release the "BRT " button when the Pro500 displays the AutoMute item.
Since the factory setting is for AutoMute to be on, Pro500will display `aMute ON`.

Note: If you accidentally don't release the "MRK" button in time, and the Pro500 goes to the next category, simply hold the "MRK" button down again, the Pro500 will scroll through all of the categories. Once you're back to your desired category, release the "MRK" button.

4 Press the MRK " button to change from `aMute ON` to `aMute OFF`.

5 To exit Programming, simply wait 8 seconds without pressing any buttons, or press the power button. *The Pro500 will display* `Complete`, *beep and return to normal operation.*

Restoring the Factory Default Settings
To restore your Pro500 to its original factory settings, press and hold the "SEN" and "BRT" buttons while turning the power on. A `Reset` message will be displayed, accompanied by an audible alert, acknowledging the reset.

Quick Reference Guide

To begin using your Pro500, just follow these simple steps:

1. Plug the small end of the power cord into the side jack of the detector, and plug the large end of the power cord into your car's accessory socket.
2. Mount your Pro500 on the windshield using the supplied windshield mount.
3. Press the power button, located on the top case.

Adjust the volume level by pressing and holding the "VOL•MUTE" button, also located on the top case.

Please read the manual to fully understand Pro500's operation and features.

Programming
Pro500 is ready to go, just plug it in and turn it on. But you can also easily change 8 features for your preferences. *Pages 14-18*

Mount Slot
Insert the Pro500's adjustable Windshield mount into this slot. *Page 7*

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

USB Data Port
This allows you to update your database, (red light and fixed position speed cameras) and other software from our website.

AlertLock/GPS Filter
Switches AlertLock feature (stored locations) on or off. *Page 8*

Power Button
Press this button to turn Pro500 on or off. *Page 8*

Sensitivity Button
Switches between Highway, AutoScan and AutoNoX settings. In general, we recommend the AutoScan mode. *Page 9*

Volume Adjustment
Increases or decreases the alert volume.

Radar Antenna and Laser Lens
The rear panel of your Pro500 should have a clear view of the road ahead. For best performance, do not mount it directly behind windshield wipers or tinted areas. *Page 6*

Alphanumeric Display
The Pro500's display will show Highway, AutoScan or AutoNoX as its power-on indication. If you prefer, you can choose other power-on indications. *Page 16-17*

During an alert, the display will indicate radar band and a precise bar-graph of signal strength. *Page 12*

NOTE: In the Dark Mode the display will not light during an alert.

Rear Laser Port
Receives laser signals from behind the vehicle.

Earphone Jack
Accepts standard 3.5mm mono earphone.

Power Jack
Plug the SmartCord into this connector. *Page 6*

Mark Location
Press to mark a specific location (e.g. speed trap, etc.). *Page 10*

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

In the Dark Mode, the Pro500's display will remain dark and only the audio will alert you. *Page 10*

GPS Signal Indicator
The GPS icon indicates reception of GPS satellite signals and confirms AlertLock signal rejection. *Page 9*

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

Power Connection

To power the Pro500, plug the small end of the SmartCord, (telephone-type connector) into the modular jack on the Pro500's right side, and plug the lighter plug adapter into your vehicle's lighter socket or accessory socket.

The Pro500 operates on 12 volts DC negative ground only. The lighter plug provided is a standard size and will work in most vehicles. However, some vehicles may require our optional sleeve to ensure a snug fit. If so, simply call or visit our website.

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

Call or visit our website for our optional Direct-wire cords.

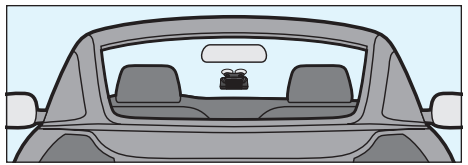
Mounting Location

WARNING: Beltronics cannot anticipate the many ways the Pro500 can be mounted. It is important that you mount the Pro500 where it will not impair your view or present a hazard in case of an accident.

Where to mount Pro500

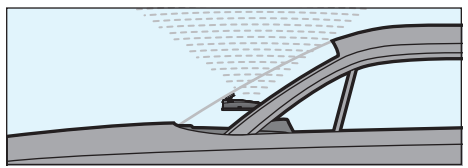
For optimum detection performance, we recommend the following:

- Using the supplied windshield mount, mount your Pro500 level and high enough on your front windshield to provide a clear view of the road ahead. For optimum rear detection, center the detector between the driver and passenger.



- Mount the Pro500 away from windshield wipers, other solid objects, and heavily tinted areas that might obstruct the radar antenna or laser lens.

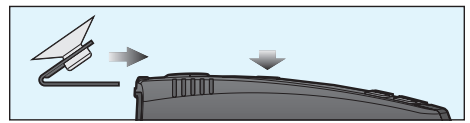
NOTE: In order for the Pro500's GPS based features to work properly, the top case must have a clear view of the sky.



Windshield Mount

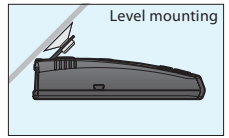
The Pro500's windshield bracket is designed for unobtrusive and hassle-free mounting.

1 Depress the adjustment button on the top of the Pro500 (by the word BELTRONICS) and slide the 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 bracket can also be bent to the correct angle. However, we suggest that you do not do this when the bracket is connected to the detector.

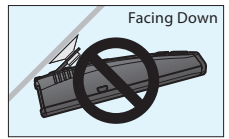


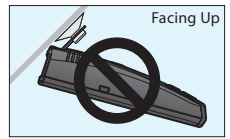
To ensure that the suction cups adhere to the windshield firmly, be sure to keep both your windshield and the suction cups clean.

2 To adjust the Pro500 on your windshield, use the EasyMount adjustment button located on the top of the Pro500, and slide Pro500 forward or backward to obtain a level horizontal position.



When installed and adjusted properly, the back top edge of the Pro500 should rest solidly against your windshield.





User's Tip

You can leave the bracket in place on your windshield, and easily remove the Pro500 by pressing the adjustment button and sliding it off the mount. Again, be sure to position the bracket where it won't present a hazard in the event of an accident.

Power
To turn the Pro500 on or off, press the power button on the top case. When you turn the Pro500 on, it will provide a beep tone, acknowledging it's ready.

Volume Control (VOL)
To increase or decrease the audio volume, press and hold the VOL•MUTE button located on the top case. A sample alert tone will be generated, along with a corresponding bar-graph on the display. Once you have reached your desired volume level, simply release the button. This level will be stored in memory.

Power-on Indication
After the Pro500's start-up sequence is complete, the display will show the full word: Highway, AutoScan or AutoNoX to indicate which sensitivity mode it is in.

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

Mute
The Mute button, located on the Pro500's top panel and SmartCord, allows you to silence the audio alert during a radar encounter. To mute the audio for a 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.

AutoMute
Your Pro500's has our patented AutoMute feature. After the Pro500 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.

AlertLock/GPS Filter
The "GPS" filter button turns the Pro500's GPS-powered AlertLock feature on and off. (default is on)

To lockout a false alert, press the mute button (on the top case or on the SmartCord) three (3) times during the alert. Pressing the mute button the first time will silence the audio. Pressing it a second time will generate a prompt on the display that will read: "Lockout?" Press it a third time to confirm that you want to lock this signal out by location and frequency. A "Stored" message will be displayed.

Once a signal has been stored, the detector will reject this signal the next time you approach this area. You will see confirmation of this by the GPS indicator spinning clockwise on the display, which confirms that the signal is being rejected.

To unlock a signal that has already been stored, simply press and hold the mute button while the GPS indicator is spinning. The display will read: "Unlock?" Press the mute button again to unlock it from memory.

GPS Signal Indicator
The GPS signal indicator provides a visual indication that the Pro500 is receiving satellite data.

NOTE: Satellite reception is required to get the most out of your Pro500. To receive satellite data, the top of the detector must have a clear view of the sky. See Mounting Location for more details.

The GPS indicator will flash on and off until it receives satellite data. Once received, the icon will stop flashing and remain on the display.

The GPS indicator also provides a visual acknowledgement that the detector is rejecting a signal that has been stored in memory using the AlertLock feature. Once a false alarm has been stored, the GPS indicator will rotate clockwise, indicating that it is rejecting that signal.

Sensitivity Switch (SEN)
The "SEN" button selects the Pro500's sensitivity mode. We recommend the AutoScan mode for most driving.

In the AutoScan mode, the Pro500 provides real-time radar performance based on your vehicle speed. As your vehicle speed increases, the radar sensitivity (X and K-band) is set to maximum range. As the vehicle speed decreases, the radar sensitivity (X and K-band only) is minimized to further reduce unwanted false alarms. Full sensitivity is maintained on all other bands.

You can also select conventional Highway and AutoNoX modes. Highway mode provides maximum sensitivity on all bands. AutoNoX is the same as AutoScan mode with X-band turned off.

Brightness (BRT)
The Pro500's BRT button selects the brightness of its display and keypad. There are five settings: Minimum (BRT MIN), Medium (BRT MED), Maximum (BRT MAX), Auto (BRT AUTO) and Full Dark (BRT DARK).

Brightness (BRT AUTO) (default)
In this setting, the display and keypad brightness will automatically adjust based on the ambient light in the vehicle.

BRT Dark (Full Dark Mode)

When you select the Dark mode with the BRT switch, the display will not show any visual alerts, (i.e. display or) when the Pro500 detects signals. Only the audible alert will tell you of detected signals.

In this mode, visual alerts can be seen on the SmartCord in addition to the audio alerts on the detector.

Mark Location (MRK)

The "MRK" button allows you to mark a specific location and label it for future reference. Once marked, the Pro500 will provide an alert with an arrow indicating the direction of the location when you reach this area again. This can be extremely useful when there are known speed traps or camera locations that you would like to remember.

To mark a particular location, press the "MRK" button. The display will read: "Mark?" Press the "MRK button again to assign a label to it. There are four (4) labels: Red Light, Speed Camera, Speed Trap and Other.

To scroll through the labels, simply press the Mute button until you reach the desired label. Once you've selected the label, press the "MRK" button again to confirm.

Once marked and assigned a label, the Pro500 will provide the following alert distances:

- Red Light Cameras = 250' or 10 seconds
- Speed Cameras = 250' or 10 seconds
- Speed Traps = .5 mile below 55 mph or 1 mile above 55 mph
- Other = .5 mile below 55 mph or 1 mile above 55 mph

NOTE: When a location is marked the first time, you must travel at least one mile away from it before it will alert you to it.

To unmark a location, simply press the "MRK" button when you are receiving a "marked location" alert. The display will read "Unmark?" Press the "MRK" again to confirm. The display will read: "Unmarked."

Audible Alerts

For Radar signals:

When you encounter radar, a distinct audible alert will sound and occur faster, (Geiger-counter-like) as the signal gets stronger. This allows you to judge the distance from the signal source without taking your eyes from the road.

NOTE: If your vehicle is moving less than 20 mph and you encounter a radar or laser signal, only a double-tone (specific to the type of signal) is used. However, the Pro500's meter will keep you informed of the signal strength until it has passed or until you reach a speed above 20 mph.

Each band has a distinct tone for easy identification:

- X-band = chirp tone
- K-band = buzzing tone
- Ka-band = double-chirp tone
- Ku-band = high pitched buzzing
- POP = same as Ka-band

For Laser and POP signals:

Since laser and POP signals are a possible threat no matter how weak, the Pro500 will provide a solid audio alert for these signals.

SmartCord

The Pro500's power jack uses a telephone-type connector. This 4-conductor connector only works with the coiled SmartCord (included), or the optional Direct-wire SmartCord.

The coiled SmartCord is a special power cord that has a power-on indicator (which only lights up when the Pro500 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, you can put the Pro500 in the Dark mode and use the SmartCord for your visual alerts. Other drivers won't know you have a detector.

An optional Direct-wire SmartCord is also available. This version includes a small display module which can be wired directly into your electrical system. This allows the Pro500 to turn on and off with the ignition when connected to a switched power source.

For more information or to order, visit our website at Beltronics.com or call us toll-free at 800.341.2288.

Speed Check

The Pro500 's Speed Check feature provides a visual indication of your vehicle speed during the first few seconds of an alert. This allows you to instantly check your speed without looking at your speedometer. Speed Check is displayed regardless of your meter setting.

NOTE: When traveling 15 mph or less, your speed will not be displayed. If you prefer, you can turn the Speed Check feature off. See Programming for details.

Signal Strength Meter

The Pro500's display provides an intuitive ultra-bright display of signal strength and text messages. The Pro500's standard bar-graph meter provides information on a single radar signal. If there are multiple signals present, the Pro500's internal computer will determine which one is the most important threat to display.

When the Pro500 detects radar, it displays the band (X, K, Ka, or Ku), and a precise bar-graph of the signal strength. When a laser signal is detected, the display will read "LASER."

NOTE: If you are operating Pro500 in the Dark mode, the display will not light when a signal is detected—only the audio and the flashing alert lamp on the SmartCord.

Threat Display

The Pro500's Threat Display option is an advanced display for experienced detector users. Please use the Pro500 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 "THT" in the Pro500's Programming (see pages 14-17).

The Pro500's Threat Display tracks detailed information on multiple radar signals and their 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 on and its relative signal strength.

Above is the Threat Display display if the Pro500 was detecting a strong Ka-band, a weak K-band, and a weak X-band signal.

As you can see, there are numeric values indicating the signal strength for each band.

A few more examples will help you better see how the ThreatDisplay 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 Pro500's Tech Display option is also for the experienced detector user. In this mode, the Pro500 will display the actual numeric frequency of the radar signal being received.

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

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

Clearing The Database

At some point you may want to clear all of the data in the Pro500's database. This includes everything in the database including all markers and your AlertLock locations. In order to do this, simply press and hold the "SEN", "BRT" and "MUTE" buttons while powering the Pro500 on. Once the "Erase?" message appears, confirm by pressing the GPS button.

How to use Programming

There are 8 user-selectable Programming options so you can customize your Pro500 for your specific driving needs. The buttons labeled "MRK" and "BRT" are also used to enter Programming, REVIEW your current settings, and to CHANGE any settings as desired. The word PGM is located on the top of the detector, and is highlighted in colored graphics. Pages 16-18 explain each option in more detail.

How to use Programming

1 To enter Programming, press and hold the "MRK" and "BRT" buttons down for 2 seconds. The unit will beep and display the word Program.

2 Then press the "BRT" 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 "MRK" 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 exit Programming, simply wait 8 seconds without pressing any button, or press the power button. The unit will display Complete, beep and return to normal operation.

An example
Here is how you would turn Pro500's AutoMute feature off.

1 Enter Programming by holding both the "MRK" and "BRT" buttons down for 2 seconds. *The Pro500 will beep and display* Program.

2 Hold the "BRT" button down. *Pro500 will scroll through the categories, starting with Pilot Light* (Pilot)*, then SpeedCheck* (spdck)*, Signal strength meter* (Meter)*, and then AutoMute* (aMute).

3 Release the "BRT" button when the Pro500 shows the AutoMute item. *Since the factory setting is for AutoMute to be on, the Pro500 will display* aMute ON.

If you accidentally don't release the "BRT" button in time, and the Pro500 goes to the next category, simply hold the "BRT" button down again and the Pro500 will scroll through the categories.

4 Press the "MRK" button to change from aMute ON to aMute OFF.

5 To complete choosing your Programming, simply wait 8 seconds without pressing any buttons, or press the power button. *The Pro500 will display* Complete*, beep and return to normal operation.*

Overview of Programming

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

Press the MRK button to change your setting within a category

PILOT LIGHT (Power-on indication)	Pilot HWY	* Full word: Highway or AutoScn
	Pilot H	Letter: H or A or C or ANX
	Pilot V	Vehicle voltage
	Pilot SPD	Vehicle speed
SPEEDCHECK	SChk ON	* Displays current speed during alert
	SChk OFF	SpeedCheck feature off
SIGNAL STRENGTH METER	Meter STD	* Standard signal strength meter
	Meter THT	Threat Display mode
	Meter TEC	Tech Display mode
AUTOMUTE	aMute ON	* Automatically reduces audio during alert
	aMute OFF	AutoMute feature is off
UNITS	Units ENG	* Speed/distance in English units
	Units MET	Speed/distance in Metric units
VOICE	Voice ON	* Voice announcements on
	Voice OFF	Voice announcements off
BANDS	Bands DFT	* Default settings
	Bands MOD	Bands have been modified
		Turn bands on/off by pressing the Mute button
	X	ON or OFF (default is on)
	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)
MARKERS	Marks DFT	
	Marks MOD	
	rCam	ON or OFF (default is on)
	sCam	ON or OFF (default is on)
	sTrap	ON or OFF (default is on)
	Othr	ON or OFF (default is on)

* **Restoring the Factory Default Settings**
To restore your Pro500 to its original factory settings, press and hold the "SEN" and "BRT" buttons while turning the power on. A Reset message will be displayed, accompanied by an audible alert, acknowledging the reset.

Pilot Light (Power-on indication)

PilotHWY (Full word)
In this setting the Pro500 will display "Highway," "AutoScan," or "AutoNoX" as its power-on indication. (factory default)

Pilot H (Letter)
In this setting, the Pro500 will display "H" for Highway, "A" for AutoScan and "ANX" for AutoNoX.

Pilot V (Vehicle voltage)
In this setting, the Pro500 will continually display "H" for Highway, "A" for AutoScan and "ANX" for AutoNoX plus the vehicle's battery voltage.

NOTE: 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 16.5 volts. The high-voltage warning is also followed by an audible alert.

Pilot SPD (Vehicle speed)
In this setting, the Pro500 will continually display "H" for Highway, "A" for AutoScan and "ANX" for AutoNoX plus the vehicle speed.

Speed Check

Spdck ON (Speed Check on)
In this setting, your vehicle's speed will be displayed for a few seconds during an alert. After a few seconds, the Pro500 will display the meter type you have selected, (e.g. bar-graph, Threat Display or Tech Display. (factory default)

SpdckOFF (Speed Check off)
In this setting, the Pro500 will display the meter type you have selected.

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 simultaneously tracks multiple radar signals. It can display mulitple radar signals and their signal strength at the same time.

NOTE: The Threat Display feature is explained in more detail on pages 12-13.

NOTE: Ku band is displayed as an X-band signal.

NOTE: If a Marker and a real threat are encountered at the same time, the display will alternate between the meter and type of marker being reported.

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 13.

AutoMute

aMute ON (AutoMute on)
In this setting, the Pro500's audio alerts will initially be at the volume you set, but after a few seconds the Pro500 will automatically reduce the volume level to keep you informed, but at a lower audio level. (factory default)

aMuteOFF (AutoMute off)
In this setting, the Pro500's audio alerts will remain at the volume you set for the duration of the radar encounter.

Units

Units ENG (Speed measured in miles per hour)
In this setting, all speed related features are displayed in miles per hour (MPH). (factory default)

Units MET (Speed measured in kilometers per hour)
In this setting, all speed related features are displayed in kilometers per hour (KPH).

Details of Programming

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 frequencies, (with the exception of POP mode and Ku-band) are monitored. This is the factory setting, and it is recommended that you use the Pro500 in this mode.

BandsMOD
In this setting, the Pro500 will warn you with an audible alert, and associated text message stating which band has been modified (i.e. "X OFF"). This warning is displayed during the start up sequence.

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

Markers

MarksDFT
In this setting, all makers in the database will be reported as you approach them. This is the factory setting and it is recommended that you use the Pro500 in this mode.

MarksMOD
In this setting, only the selected Markers will be reported.

NOTE: The Pro500 has plenty of built in memory to store thousands of locations. In the rare case that the database would become 80% full, a message will appear at start up to let you know you're reaching its limit.

Specifications

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
- Ku-band 13.450 GHz ±25 MHz (Europe)
- Laser 904nm, 33 MHz bandwidth

Radar Receiver / Detector Type
- Superheterodyne, Varactor-Tuned VCO
- Scanning Frequency Discriminator
- Digital Signal Processing (DSP)

GPS Revceiver
- SiRFstar III

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

Display Type
- 280 LED Alphanumeric
- Bar Graph, SpeedCheck, Threat Display, or Tech Display
- 5-Levels of Brightness Control, including Full Dark Mode

Power Requirement
- 12VDC, Negative Ground
- SmartCord (included)

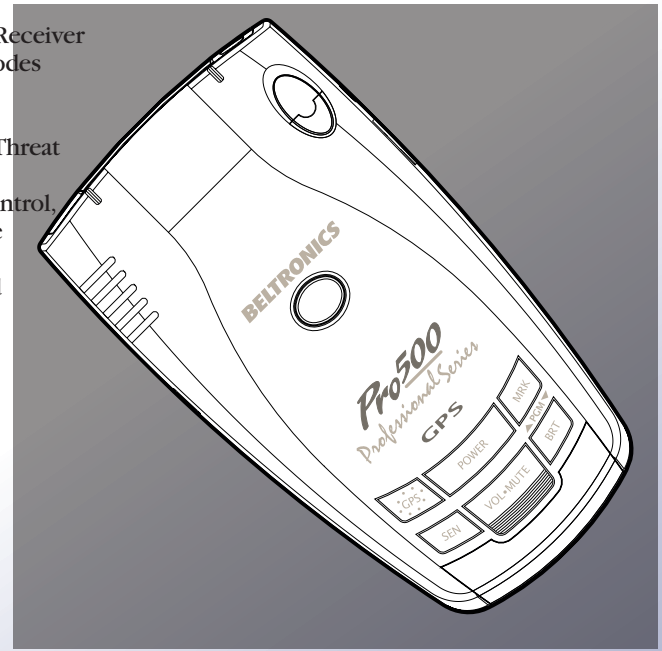
Programming
- Power-On Indication
- SpeedCheck
- Signal Strength Meter
- AutoMute
- Units
- Voice Alerts
- Radar / Laser Bands
- Markers

Sensitivity Control
- AutoScan, Highway and AutoNoX

Auto Calibration Circuitry

VG2 Immunity

Dimensions (Inches)
- 1.40" H x 2.90" W x 5.35" L



Interpreting Alerts

Although the Pro500 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 Pro500 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 Pro500's warning system for radar and laser alerts.

Alert	Explanation
The Pro500 begins to sound slowly, then the rate of alert increases until the alert becomes a solid tone. The Signal Meter ramps accordingly.	You are approaching a continuous radar source aimed in your direction.
The Pro500 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.
The Pro500 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.
The Pro500 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.
The Pro500 alerts slowly for awhile and then abruptly jumps to a strong alert.	You are approaching a radar unit concealed by a hill or an obstructed curve.
The Pro500 alerts intermittently. Rate and strength of alerts may be consistent or vary wildly.	A patrol car is travelling 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.
The Pro500 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.
The Pro500 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.

Radar

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.

POP

Because intrusion alarms and motion sensors often operate on the same frequency as X, and K-band radar, your Pro500 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 Pro500'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 POP mode.

Laser

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.

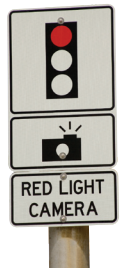
Red Light Cameras

How Red Light Cameras Work

Red-light cameras use three basic things: 1) a camera, 2) a way to trigger the camera, and 3) a computer.

An intersection may have more than one camera to monitor traffic from multiple directions. The trigger is typically a series of wires buried just beneath the surface of the road. These wires are separated by a pre-set distance in order to create a magnetic field or induction loop. Once a vehicle is in the intersection, the loop or circuit becomes closed and alerts the computer to take a picture.

In some states, tickets are issued to the car's owner, no matter who's actually driving. In this case, the red-light camera only needs to photograph the vehicle's rear license plate. In other states, the actual driver is responsible for paying the ticket. In this case, the system needs a second camera in front of the car, in order to get a shot of the driver's face.



Speed Cameras

How Speed Cameras Work

There are several types of fixed position speed cameras used, including radar, laser, induction loop and photo-based.

Radar and laser based cameras are typically mounted near the road and transmit a short range signal across the lanes monitored. Since this signal is transmitted across the road instead of down the road like many handheld systems, detecting them in time is critical.

Another technology used is an inductive loop system. This type of system utilizes wire buried just beneath the surface of the road to trigger a computer which calculates speed between the two points.

Photo-based systems take two sets of pictures of all passing vehicles between two separate fixed locations. Both sets of photographs are date and time stamped, which enables the system to calculate average speed between the two locations.

Fixed speed cameras can also be set up to monitor one to four lanes of traffic in the same direction. To achieve this, a sensor is installed in each lane and a wide angle camera lens is used to photograph the vehicle which is speeding.

SWS

How SWS 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 Pro500 can display are listed on the facing page.

From the factory, your Pro500 is programmed with SWS decoding OFF. If you wish to detect this system, use the Programming feature to turn the Pro500's SWS decoding ON. If SWS is used in your area, your Pro500 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 the Pro500'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*

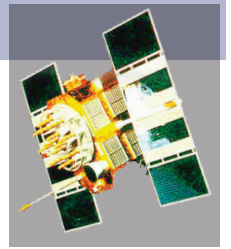
Travel Information/Convenience

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

GPS



How GPS Works

The Global Positioning System (GPS) is made up of twenty four orbiting satellites and was developed by the U.S. military. There are at least four satellites visible at any given time every day.

A GPS receiver is designed to locate and receive data from four of these satellites. This data includes the distance to your location from each of the satellites. Once the distance from each satellite is known, the receiver can calculate and pinpoint your exact location.

Updates

Software Updates

The Pro500's red light and speed camera database is easily updated using our exclusive detector software tools found on our web site. Firmware, or the operating software for the detector, can also be updated using these tools.

In order to have access to these updates, you must register your Pro500 at Beltronics.com. Once registered, you will receive email notifications that updates are now available for your database or firmware.

The Pro500 will need to be powered up to use the software tools. If you have a laptop computer, you can take it out to the vehicle to download the updates. If not, you will need to purchase a 12-volt adapter. These can be found at your local electronics retailer or our website under accessories.

Service

Service Procedure

If your Pro500 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 Call us at 800.341.2288. We may be able to solve your problem over the phone. If the problem requires that you send your Pro500 to the factory for repair, we will provide you with a Service Order Number, which must be included on the outside of your shipping box.

Enclose the following information with your Pro500:

- Your Service Order Number
- A copy of your sales receipt
- Your name and return address
- Your daytime telephone number
- A description of the problem you are experiencing

Out Of Warranty Repairs

For out of warranty repairs, include prepayment in the amount you were quoted by the Beltronics Customer Service Representative. If the detector has been damaged, abused or modified, the repair cost will be calculated on a parts and labor basis. If it exceeds the basic repair charge, you will be contacted with a quotation. If the additional payment is not received within 30 days (or if you notify us that you choose not to have your Pro500 repaired at the price quoted), your Pro500 will be returned, without repair. Payment can be made by check, money order, or credit card.

Ship Pro500 and SmartCord to:

Troubleshooting

Problem	Solution
The Pro500 beeps briefly at the same location every day, but no radar source is in sight.	• An X-band motion sensor or intrusion alarm is located within range of your route. Use the AlertLock feature to filter this signal out.
The Pro500 does not seem sensitive to radar or laser.	• Make sure that windshield wipers do not block the Pro500'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. • The Pro500 may be in City Mode.
The Pro500 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.
The Pro500's display is not working.	• Press the BRT button to deactivate Dark Mode.
The Pro500's audible alerts are less loud after the first few alerts.	• The Pro500 is in AutoMute Mode. See page 9 for details.
The Pro500 bounces or sags on windshield.	• The Pro500 is not making contact with the windshield to provide stability. While holding down the Pro500's EasyMount button, slide the Pro500 further back toward the windshield so that the back top edge makes firm contact.
The Pro500's power-on sequence reoccurs while you are driving.	• A loose power connection or dirty lighter socket can cause the Pro500 to be briefly disconnected.
Your 14-year old son has changed all 8 of the Programming options.	• You can return all of the user Preferences to the factory defaults settings by holding down the "SEN" and "BRT" buttons while you turn the Pro500 on.
The Pro500 feels very warm.	• It is normal for the Pro500 to feel warm.

Problem	Solution
The Pro500 will not turn on.	• Check that vehicle ignition is ON. • Check that vehicle lighter socket is functional. • Try the Pro500 in another vehicle.
GPS indicator will not stop flashing.	• The Pro500 does not have a clear view of the sky. Reposition it or try it in another vehicle.
AlertLock lock filter does not seem to be working.	• Check to make sure the GPS button is on.
At first detect, numbers come up on the display.	• SpeedCheck feature is on. You can turn it off in Programming.

Explanation of Displays

No display — The Pro500 is in Dark mode. Press the BRT button to change the brightness. (page 10)

PilotHWY — One of the many Preferences. (pages 14-18)

Ka1 X9, *or* K9 X1, *or* Ka9 K2 X1, etc. — The Pro500 has been set to Threat Display Mode in Programming. (pages 12-13)

Reset Power — The Pro500 needs to cycle power. Unplug it from power socket and restart.