STALKER SPORT 2

Digital Sports Radar

Owner’s Manual
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by Stalker Radar / Applied Concepts, Inc., could void the user’s authority to operate the Stalker SPORT 2.

Not intended for Law Enforcement use.

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Introduction

Congratulations! You have purchased the smallest and most accurate baseball gun system available. The Stalker SPORT 2 radar was designed specifically to measure the speed of balls thrown by baseball players.

The Stalker SPORT 2 radar sends out very high frequency radio waves and measures the change in the frequency after it bounces off a moving object. This is commonly referred to as Doppler Radar. This invisible radio wave is extremely low power (about 1/200th of a watt) and is completely safe for close and continuous operation.

The Stalker SPORT 2 is a true digital radar system. The SPORT 2 converts the reflected microwave signals into a digital stream of data. The gun’s own computer then processes this data stream using sophisticated programming, to interpret, filter, and measure the speeds. This technology is closely related to the compact digital disc and modern personal computers. This type of radar system has the potential to provide substantially superior performance and accuracy over conventional radar systems.

While the technology in the Stalker SPORT 2 is extremely advanced, its operation is quite simple. You need only to press the ON/OFF key and pull the trigger to begin measuring baseball release speed and plate speed.

If you want to be a power user and try other features and settings, reading through this manual will help you to take full advantage of the other features and capabilities of the Stalker SPORT 2.

Have fun!
What's Included

The components included with your radar are listed below. If you are missing any parts or if you would like to upgrade your package, contact Stalker Radar at 1-877-782-5537.

SPORT 2 Package #1

- K-Band Radar Gun
- 6-AA Alkaline Batteries (NOT rechargeable)
- Operator Manual
- Rugged Shipping Box

SPORT 2 Package #2

- K-Band Radar Gun
- 6-AA Nickel Metal Hydride (NiMH) Batteries (rechargeable)
- Wall Battery Charger
- Operator Manual
- Rugged Shipping Box

SPORT 2 Package with Hard Case

- K-Band Radar Gun
- 6-AA Nickel Metal Hydride (NiMH) Batteries (rechargeable)
- Wall Charger
- Operator Manual
- Hard Case
Quick Start Instructions

The **STALKER** SPORT 2 has several features that allow the gun’s optimal performance in baseball applications. With some basic understanding, the gun is very simple to operate.

**Basic Operation**

Power is supplied from 6 AA batteries installed in the handle. Turn the gun **ON** by pressing the **ON/OFF** button. Squeeze the trigger to begin operating (transmitting).

**Important Settings**

There are four buttons that control the radar gun functions: The two blue buttons work together, and the two silver buttons work together. The blue buttons are used for changing the settings, while the silver keys are operational keys.

<table>
<thead>
<tr>
<th><strong>MENU (Blue Button)</strong></th>
<th>This button enters the MENU system to select a feature to be changed.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SELECT (Blue Button)</strong></td>
<td>Once the MENU button has selected a feature, use the SELECT button to change the setting for that feature.</td>
</tr>
<tr>
<td><strong>TRANSMIT (Silver Button)</strong></td>
<td>Toggles the transmitter on and off (instead of the normal trigger activation).</td>
</tr>
<tr>
<td><strong>RECALL (Silver Button)</strong></td>
<td>Displays the last 5 speeds recorded and stored.</td>
</tr>
</tbody>
</table>

**Turning the Transmitter ON and OFF**

There are two ways to turn on the radar transmitter to begin operating:

- Trigger Transmit: Pull the trigger to transmit.
- Transmit Button: Press the silver TRANSMIT button to toggle the transmitter ON or OFF.

**NOTE:**

* The XMIT icon displays when the gun **IS** transmitting.
* The XMIT icon does not display when the gun **IS NOT** transmitting.
Controls and Indicators

LCD Display Icons

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STORE</td>
<td>Is on when recalling speeds from the RECALL queue.</td>
</tr>
<tr>
<td>LO BAT</td>
<td>Indicates the batteries are low and need recharging or replacement. LO BAT blinks when batteries are approaching exhaustion.</td>
</tr>
<tr>
<td>XMIT</td>
<td>Indicates the gun is transmitting and is able to take readings.</td>
</tr>
<tr>
<td>PEAK</td>
<td>Indicates the Peak Mode window is “ON” allowing peak speed display.</td>
</tr>
</tbody>
</table>

LCD Display Windows

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MESSAGE</td>
<td>Messages display in the upper left corner (e.g. MPH, KM/H, LOCK, RECALL).</td>
</tr>
<tr>
<td>PEAK SPEED</td>
<td>Indicates the peak speed (release speed) in large numbers on the lower right.</td>
</tr>
<tr>
<td>LAST SPEED</td>
<td>Indicates the active or last speed (plate speed) in the upper right corner.</td>
</tr>
</tbody>
</table>
9-Pin D Connector

The 9-Pin D Connector has the following pinout: Pin 1 is on the top right, and Pin 9 is on the bottom left.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AUX INPUT</td>
</tr>
<tr>
<td>2</td>
<td>RS-232 TX Transmit data-stream</td>
</tr>
<tr>
<td>3</td>
<td>RS-232 RX Receive (not used at this time)</td>
</tr>
<tr>
<td>4</td>
<td>6.6 V OUT Output (limited to 50 mA)</td>
</tr>
<tr>
<td>5</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>Charger Input 120V AC Wall Charger</td>
</tr>
<tr>
<td>7</td>
<td>RS-485-A Transmit data-stream</td>
</tr>
<tr>
<td>8</td>
<td>RS-485-B Transmit data-stream</td>
</tr>
<tr>
<td>9</td>
<td>Voltage Input External voltage input, 6VDC to 16 VDC</td>
</tr>
</tbody>
</table>
Detailed Instructions

Providing Power to the SPORT 2

**WARNING:** Do not attempt to recharge Alkaline batteries if your SPORT 2 came with this type of batteries. Attempting to recharge Alkaline batteries may damage the SPORT 2 and will void the warranty.

**Alkaline Batteries** - The battery compartment in the SPORT 2 Package #1 contains 6 Alkaline non-rechargeable batteries. When new, a set of six alkaline batteries will power the gun for about 5 hours of continuous transmitting. The Alkaline batteries cannot be recharged. Attempting to recharge alkaline batteries may damage the SPORT 2 and will void the warranty.

**Nickel Metal Hydride (NiMH) Batteries** - The battery compartment in the SPORT 2 Package #2 and the SPORT 2 Package with Hard Case contains 6 NiMH rechargeable batteries. When fully charged, one set of six batteries will power the gun for about 5 hours of continuous transmitting. The NiMH batteries can be recharged (in 12 hours) in the gun using the included Wall Charger. Optionally, the batteries can be removed and charged with a NiMH battery charger purchased at retail.

**External** - To power the SPORT 2 from an external 12VDC source instead of using batteries, use the optional 12V DC Cigar Cable attached to the 9-pin connector on the side of the gun. The 12V DC cigar cable does not charge the batteries while it is supplying power to the Radar.

Turning the Transmitter ON and OFF

The radar transmitter must be turned ON to measure speed. There are two ways to transmit: 1) Press the trigger, or 2) press the TRANSMIT button.

**Trigger Transmit** - Squeeze and hold the trigger in to transmit. In the Continuous trigger mode (default) when the trigger is released, the transmitter turns off and any current readings are left on the screen. Since the transmitter draws most of the power, trigger operation helps to save battery life. Other trigger modes are explained in the Option Menu section.

**TRANSMIT Button** - The silver Transmit button toggles the transmitter ON and OFF. Each time you push this button, it switches between transmit and hold. Using this button to turn on the transmitter allows the gun to continually operate automatically, without the need to press the trigger.

**NOTE:**
* The XMIT icon displays when the gun **IS** transmitting.
* The XMIT icon does not display when the gun **IS NOT** transmitting.

---

**The Peak Function**

The Peak option activates the automatic top speed display in the PEAK SPEED WINDOW. For example, when tracking a baseball pitch, the peak speed is the same as the release speed since a ball only slows down after it is thrown. When the Peak mode is ON, the PEAK icon appears on the display and only the highest speed for each target acquired displays in the Peak window. The active, changing target speed displays in the upper right window.

**NOTE:**
* The PEAK icon and speed window display when the Peak option **IS** selected.
* The PEAK icon and speed window do not display when the Peak option **IS NOT** selected.

---

**Using the Trigger to Lock Speeds**

The trigger serves two functions. It can control the transmitter, or it can be used as a speed locking device.

When the gun is placed into continuous transmit mode using the silver TRANSMIT button or if the Trigger Option is on Loc (lock), the trigger does not affect the transmitter. Instead, press the trigger to lock the currently displayed speed to the main window. If Peak mode is on, the active speed and the peak speed just freeze in their respective windows. LOCK alternately displays in the upper left message window. Press the trigger a second time to unlock the readout. This function is useful if the operator needs to manually hold readings.
The Recall Key Function

The silver RECALL button redisplay the last five speed readings that were measured. The stored peak speed, last speed, and/or locked speed in the recall queue display in a sequential mode as the RECALL button is pressed. The MESSAGE WINDOW cycles through the Recall Number, speed units, and LOCK (if on). The STORE icon is on while recalled speeds are displayed.

Setting Up the Radar Unit

Setting up the radar unit is fast and easy.

Briefly press the MENU key on the keypad to enter the OPERATOR MENU. Briefly press the MENU key again to step through the features. Press the SELECT key to change the settings. Press the trigger at any time to exit the OPERATOR MENU and save all settings.

The factory default for each setting is indicated by the bold underlined setting.

The Operator Menu

<table>
<thead>
<tr>
<th>Menu Step</th>
<th>Description</th>
<th>FEATURE</th>
<th>SETTINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MENU Step ORDER</td>
<td>Description</td>
<td>Step down by pressing MENU key</td>
<td>Change using the SELECT key</td>
</tr>
<tr>
<td>1</td>
<td>Range</td>
<td>RANGE</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>2</td>
<td>Peak On/Off</td>
<td>PEAK</td>
<td>OFF, On</td>
</tr>
</tbody>
</table>

Main Window (bold indicates factory default)
The Range Setting

The Range setting affects the sensitivity (clocking distance) of the radar. The settings are:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Setting the range to 3 increases the gun’s sensitivity and lengthens the clocking distance. It “looks” as far away as possible for targets and gives the gun the highest level of performance. This is the default setting.</td>
</tr>
<tr>
<td>2</td>
<td>Setting the range to 2 sets the gun to a medium range in its clocking distance.</td>
</tr>
<tr>
<td>1</td>
<td>Setting the range to 1 decreases the gun’s sensitivity and shortens its clocking distance. The 1 range setting is handy for clocking objects close to the gun and when you want to restrict the gun from “seeing” objects farther out in the background.</td>
</tr>
</tbody>
</table>

Selecting Options

Selecting the options is more involved (but still easy), because there are 15 features to select. The SPORT 2 ships with the default (BOLD) settings indicated in the chart.

Enter the OPERATOR MENU as described on the previous page.
Press and hold the MENU key (while in the OPERATOR MENU) to enter the OPTION MENU. All display segments will briefly flash to indicate the change of menu.
Briefly press the MENU key again to step through the FEATURES. The SELECT key changes the SETTINGS.
Press the trigger at any time to exit the OPTION MENU, save all settings and return to normal operation.
Press and hold the MENU key to return to the OPERATOR MENU. All display segments will flash to indicate the change of menu.

The factory default for each setting is indicated by the bold underlined setting.
The Option Menu

<table>
<thead>
<tr>
<th>MENU Step ORDER</th>
<th>Description</th>
<th>MESSAGE WINDOW</th>
<th>Main Window</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low Speed</td>
<td>LOW</td>
<td>OFF, 15, <strong>30</strong></td>
</tr>
<tr>
<td>2</td>
<td>Units</td>
<td>MPH, KM/H</td>
<td><strong>Un it</strong></td>
</tr>
<tr>
<td>3</td>
<td>Resolution</td>
<td>RES</td>
<td><strong>onES, kmH</strong></td>
</tr>
<tr>
<td>4</td>
<td>Auto-Clear Delay</td>
<td>CLEAR</td>
<td><strong>0SEC, 1SEC, 2SEC, 3SEC, 4SEC, OFF</strong></td>
</tr>
<tr>
<td>5</td>
<td>Trigger Function</td>
<td>TRIG</td>
<td><strong>Con, 55, Loc</strong></td>
</tr>
<tr>
<td>6</td>
<td>Aux Trigger Function</td>
<td>AUX</td>
<td><strong>OFF, StoP</strong></td>
</tr>
<tr>
<td>7</td>
<td>Stopwatch Mode</td>
<td>STOP</td>
<td><strong>Std, LAP, SPLt</strong></td>
</tr>
<tr>
<td>8</td>
<td>Cosine Angle</td>
<td>ANGLE</td>
<td>0, 5, 10, 15, 20, 25, 30, 35, 40, 45</td>
</tr>
<tr>
<td>9</td>
<td>Serial Port Speed</td>
<td>BAUD</td>
<td>12, 24, 48, <strong>96, 192, 384</strong></td>
</tr>
<tr>
<td>10</td>
<td>Serial Port Format</td>
<td>FOR</td>
<td><strong>8, 8, AP</strong></td>
</tr>
<tr>
<td>11</td>
<td>Leading Zero</td>
<td>LEAD0</td>
<td><strong>2Ero, SPAc, none</strong></td>
</tr>
<tr>
<td>12</td>
<td>Message Termination</td>
<td>TERM</td>
<td><strong>Ct, CrLF, v Cr, v CL</strong></td>
</tr>
<tr>
<td>13</td>
<td>Peak Message Type</td>
<td>PKMSG</td>
<td><strong>Cont, 5 msg</strong></td>
</tr>
<tr>
<td>14</td>
<td>Reset</td>
<td>RESET</td>
<td><strong>YES, no</strong></td>
</tr>
<tr>
<td>15</td>
<td>Reset Confirmation</td>
<td>SUREP</td>
<td><strong>YES, no</strong></td>
</tr>
</tbody>
</table>
Options Defined

- Low Speed: Setting values are different for each type of unit (MPH or KM/H) selected. Those shown above are for the default in MPH units. See below for all values.

<table>
<thead>
<tr>
<th>Units</th>
<th>Low Speed Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH</td>
<td>OFF, 15, 30</td>
</tr>
<tr>
<td>KM/H</td>
<td>OFF, 25, 50</td>
</tr>
</tbody>
</table>

- Resolution: Select OFF to display speed in whole units, as 25 MPH, or 1/10 to display speed with tenths, as 25.4 MPH.

- Auto-Clear Delay: The time the speed reading is held after the target is lost and before the display screen clears. If OFF, the speed displays until the next speed is acquired.

- Trigger Function: The Trigger settings are Con (Continuous), SS (Start / Stop), and Loc (Lock). The trigger settings function as follows:

<table>
<thead>
<tr>
<th>Transmit</th>
<th>Trigger Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON / OFF</td>
<td>Con</td>
<td>Pull to transmit, release to hold.</td>
</tr>
<tr>
<td>ON / OFF</td>
<td>SS</td>
<td>Pull and release to transmit, pull and release to hold.</td>
</tr>
<tr>
<td>ON</td>
<td>Loc</td>
<td>Pull and release to lock speed(s), pull and release to release locked speed(s).</td>
</tr>
</tbody>
</table>

NOTE: When the Loc setting is selected in the Option MENU, the Transmit function is turned on as if the silver TRANSMIT button had been pressed. Clicking the trigger alternately locks and releases the current speed(s).

- Aux Trigger Function: The Aux Trigger settings are: OFF = ignored, StoP = stopwatch.
Stopwatch Mode: This feature is only displayed (in the OPTIONS MENU) if the Aux Trigger is set to $\text{StoP}$. The Optional Stopwatch Cable is needed to use the stopwatch feature. The stopwatch may be set to standard, lap, or split timer. The timer displays in the MESSAGE WINDOW. Press and hold the stopwatch trigger for 1 second to stop the timer and go back to radar mode.

Stopwatch Timer Modes:

<table>
<thead>
<tr>
<th>Timer Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Timer</strong></td>
<td>Successive presses of the stopwatch trigger start the stopwatch at 0.00.00 or stop the stopwatch.</td>
</tr>
<tr>
<td><strong>Lap Timer</strong></td>
<td>Each press of the stopwatch trigger displays the time since the last trigger press, and resets the timer to 0.00.00 in the background.</td>
</tr>
<tr>
<td><strong>Split Timer</strong></td>
<td>Each press of the stopwatch trigger displays the current cumulative time.</td>
</tr>
</tbody>
</table>

Timer Display Under 10 minutes:

Timer Display Over 10 minutes:

- Cosine Angle: The cosine angle is $0 – 45^\circ$. See the *Angle Error* topic for details.

- Serial Port Speed: 1200, 2400, 4800, 9600, 19200, or 38400.

- Serial Port Format: The “-” (dash) is for no serial output, the A format is for Active Target Speed, the AP format is for Peak Speed, and the Col format duplicates the output of the legacy *STALKER* Sport gun.

- Leading Zero:
  
  - Zero = 090 090.1
  - Space = 90 90.1
  - None = 90 90.1

- Message Termination:
  
  - Cr = Carriage Return only (0x0D)
  - CrLF = Carriage Return & Line
Feed (0x0D, 0x0A)
u Cr = units followed by Carriage Return
e.g. “MPH” 0x0D
u CL = units followed by Carriage Return &
Line Feed, e.g. km/h 0x0D 0x0A

⚠️ Peak Message Type:  Continuous = continually streams peak speed
(only if format = AP)
Single = sends one peak speed message per
acquired target

⚠️ Reset Confirmation:  Steps display when the Reset option is set to YES.
If RESET = YES, then the confirmation SURE displays.
To reset all settings to the factory defaults, select YES and then
pull the trigger to exit.
To not change the settings, select NO and pull the trigger to exit.

**Recommended Settings**

**Settings for Baseball Scouts**

It is important that the gun is set correctly when measuring baseballs. Check
these settings:

- **Low Speed**: 30 MPH
- **Range**: 3 - Maximum sensitivity is needed
- **Peak ON/OFF**: ON - This is for release speed numbers
- **Auto-Clear Delay**: 2 seconds – After loss of target tracking, holds the speeds on the display before clearing them
Battery Information

**WARNING:** Do not attempt to recharge Alkaline batteries if your SPORT 2 came with this type of batteries. Attempting to recharge Alkaline batteries may damage the SPORT 2 and will void the warranty.

The SPORT 2 uses 6-AA batteries. Squeeze and remove the end cap on the handle to access the battery compartment. The batteries’ transmit time is approximately 5 hours when using Nickel Metal Hydride (NiMH) and 5 hours when using Alkaline batteries.

Operational Time using AA NiMH Batteries

The SPORT 2 draws the most current when it is transmitting, so the run time depends upon how often the gun is transmitting. The SPORT 2 also has a sleep mode to conserve battery life when it is not being operated. The sleep mode is automatically initiated after about 10 seconds of inactivity when the transmitter is off. Squeezing the trigger or pressing any key immediately “wakes” the gun and brings it back into operation.

<table>
<thead>
<tr>
<th>Operational Status</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Transmitting</td>
<td>5 Hours</td>
</tr>
<tr>
<td>Typical Trigger Operation</td>
<td>10-11 Hours</td>
</tr>
</tbody>
</table>

Operational Time using Alkaline Batteries

The SPORT 2 operates the same way when using Alkaline batteries. Just remember, do not attempt to recharge Alkaline batteries.

<table>
<thead>
<tr>
<th>Operational Status</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Transmitting</td>
<td>5 Hours</td>
</tr>
<tr>
<td>Typical Trigger Operation</td>
<td>10-11 Hours</td>
</tr>
</tbody>
</table>

Low Battery Warning

The **LO BAT** icon blinks when the battery runs low. The SPORT 2 operates for a short time after this. Operation is disabled when the battery voltage falls to an extremely low level. LoV displays in the large main window in this case. Now is the time to recharge the NiMH batteries or replace the Alkaline batteries.

**NOTE:** WITH NiMH BATTERIES, DO NOT CHARGE THE BATTERIES UNTIL THE GUN DISPLAYS **LO BAT**.
Charging the Batteries

**WARNING:** Do not attempt to recharge Alkaline batteries if your SPORT 2 came with this type of batteries. Attempting to recharge Alkaline batteries may damage the SPORT 2 and will void the warranty.

Plug the connector of the wall charger into the 9-Pin connector on right side of the SPORT 2 when the **LO BAT** indicator blinks. Then plug the wall charger into a 110-120 volt wall outlet. The NiMH batteries should take about 12 hours to recharge.

NiMH batteries perform best when they are fully discharged and then fully recharged.

Auto-Shutdown Feature

The SPORT 2 has a 30 minute time-out auto-shutdown feature. After 30 minutes in sleep mode, the SPORT 2 automatically shuts off.

How To Save Battery Life

Since the transmitter has the highest current draw, turn the transmitter off whenever you are not taking readings.

If you use the trigger to start and stop transmitting, it’s easy to save battery life. If you tripod mount the gun, (and use the silver TRANSMIT button to transmit) then turn the transmitter off between sessions.

**Angle Errors**

The most common mistake made with all radar guns is trying to clock targets at angles.

All radar guns work on the Doppler principle and need to clock objects moving directly at or away from the gun. Clocking at an angle with a stationary radar gun results in angle error, and the gun displays a speed that is LOWER than the actual speed.

**Cosine Angle Error Chart**

<table>
<thead>
<tr>
<th>True Speed</th>
<th>0 Degrees</th>
<th>5 Degrees</th>
<th>10 Degrees</th>
<th>15 Degrees</th>
<th>30 Degrees</th>
<th>45 Degrees</th>
<th>90 Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.0 mph</td>
<td>25.0 mph</td>
<td>24.9 mph</td>
<td>24.6 mph</td>
<td>24.1 mph</td>
<td>21.7 mph</td>
<td>17.7 mph</td>
<td>0 mph</td>
</tr>
<tr>
<td>50.0 mph</td>
<td>50.0 mph</td>
<td>49.8 mph</td>
<td>49.2 mph</td>
<td>48.3 mph</td>
<td>43.3 mph</td>
<td>35.4 mph</td>
<td>0 mph</td>
</tr>
<tr>
<td>75.0 mph</td>
<td>75.0 mph</td>
<td>74.7 mph</td>
<td>73.9 mph</td>
<td>72.4 mph</td>
<td>65.0 mph</td>
<td>53.0 mph</td>
<td>0 mph</td>
</tr>
<tr>
<td>100.0 mph</td>
<td>100.0 mph</td>
<td>99.6 mph</td>
<td>98.5 mph</td>
<td>96.6 mph</td>
<td>86.6 mph</td>
<td>70.7 mph</td>
<td>0 mph</td>
</tr>
<tr>
<td>125.0 mph</td>
<td>125.0 mph</td>
<td>124.5 mph</td>
<td>123.1 mph</td>
<td>120.7 mph</td>
<td>108.3 mph</td>
<td>88.4 mph</td>
<td>0 mph</td>
</tr>
</tbody>
</table>
Radar Gun Placement

For accurate readings, the radar gun must be placed in the line of travel of the target. At slight angles, the error is very small; however, at larger angles, the error becomes substantial.

**NOTE:** The SPORT 2 can automatically adjust for angle error by changing the Cosine Angle settings in the Option MENU.

Calculating Angle Errors

If you know the angle at which you are clocking, you can calculate the actual speed by taking the radar reading and dividing by the cosine of the angle.

For example: if you are clocking at 30 degrees, and the gun displays 129.9 mph, take 129.9 and divide by the cosine of 30 degrees (0.866) to get a true speed of 150.0 mph.
Interference Problems

Interference Frequencies

The **STALKER** SPORT 2 radar transmits at a frequency of 24.125 GHz (24,125,000,000 Hz), using a K-Band Transmitter. The receiver is designed to read the Doppler frequency (the change in frequency) between 360 Hz and 11,000 Hz. There are very few devices other than another radar gun that could cause interference in a radar gun’s transmission frequency range. However, there are a number of devices that could interfere with a radar gun in the receiver’s frequency range.

What Does Interference Do?

Interference can cause a radar gun to read random readings, or make it harder for the radar gun to “see” the intended target.

Random readings are an obvious sign that there is interference. However, a loss of sensitivity can be subtle. A common situation occurs when a large number of professional baseball scouts operate many radar guns in close proximity.

A loss of sensitivity can cause the radar gun to be unable to “see” far enough away to get the ball speed right when it leaves the pitcher’s hand. Then, as the ball gets closer to the plate, the radar is able to get a reading, but only after the ball has slowed down. The result: the peak speed registers lower than it actually is.

Sources of Interference

There are two main sources that can cause ghost (random) readings in radar guns: electrical devices and objects that move or vibrate.

**Electrical sources** include television monitors, fluorescent lights, cellular phones, computers, some radio transmitters, and power transformers.

**Moving or vibrating objects** include ventilation fans, motors, and blowing debris that can produce a nearly constant speed reading.
How to Eliminate Interference

If you are experiencing erroneous readings, try these solutions:
Change your position to change where the gun is aimed.
Lower the sensitivity by changing the Range on the Operator MENU to 1 (low setting).
Change the Option MENU Low Speed setting to a setting with a higher low-speed cutoff if the readings are at low speeds (often interference from nearby motors).

SPORT 2 Accessories

The STALKER SPORT 2 radar gun has a host of optional accessories. For current pricing and availability, contact sales at 1-888-STALKER.

Accessories

- Stopwatch Control Cable – a 4 foot cable with momentary switch that connects to the 9-Pin connector.
- 12VDC CIG Cable – Connects to the 9-Pin connector and plugs into a cigarette lighter receptacle.
- RS-232 Serial Cable that connects to the 9-pin connector for RS-232 data output.
**Service Information**

A Check List Before Servicing the SPORT 2 Radar

**Check the Settings** - If you are having a problem with your SPORT 2, first make sure that the settings are correct for your application. Read the Operator and Option Setup MENUS sections. Call Customer Service at 1-877-STALKER if you need help with this.

**Check the Battery** - If the SPORT 2 does not turn on, the problem is usually with the batteries. Try charging the batteries if they are NiMH batteries, replace the batteries if they are Alkaline. If it still does not turn on, you could use a volt meter to see if the batteries are producing at least 7.5 volts. You may need to order new batteries.

**Call Customer Service** - If the problem is not rectified with these steps, call Customer Service at 1-877-STALKER for help. A service representative will determine if the gun needs to be sent to the factory.

**Factory Service Center Address**

Applied Concepts, Inc.
Attn. Repair Department
2609 Technology Drive
Plano, TX 75074
1-877-STALKER Toll Free
Phone: (972) 801-4807
Fax: (972) 398-3781

**Warranty Information**

The SPORT 2 radar is covered for One (1) Full Year, Parts and Labor, against defects in workmanship, parts, or materials, and is guaranteed to operate within specifications for that period.

**STALKER** Radar will repair or replace, at their option, any component or system found to be defective. The customer is responsible for shipping the defective product to the factory (freight prepaid), and **STALKER** Radar will pay for the return shipping via UPS ground service back to the customer. Any expedited air shipping charges are to be paid by the customer.

This full warranty does not cover damage due to dropping, water, salt, improper voltage, fire, charging Alkaline batteries in the unit, attempted repairs or modifications by an unauthorized service agent, or any other unusual treatment.
Specifications

PERFORMANCE SPECIFICATIONS

- Speed Range: 5 - 150 MPH
- Accuracy: ±3% of reading
- Max. Clocking Distances: 300 Feet with unobstructed view

MICROWAVE SPECIFICATIONS

- Operating Frequency: 24.125 GHz (K-Band) +/- 50 MHz
- Polarization: Circular Polarization
- 3 db Beam width: 14 Degrees Nominal (15 Degrees Maximum)
- Microwave Source: Gunn-Effect Diode
- Receive Type: Schottky Barrier Mixer Diode
- Power Output: 10 Milliwatts Nominal

The STALKER SPORT2 Complies with Part 15 of the FCC rules.
FCC ID #IBQACMI005.

GENERAL SPECIFICATIONS

- Product Type: Stationary Doppler Radar
- Computer Processor: Digital Signal Processor
- Display Type: Liquid Crystal
- Operating Temperatures: -20F to +120F
- Storage Temperatures: -40F to +140F

ELECTRICAL SPECIFICATIONS

- Battery Capacity: 7.5 VDC, 1.6 Ah, Ni-MH
- Current Requirements: Transmitting - 0.35 Amps
- (At 7.5 Volts DC) Standby - 0.14 Amps
- Sleep Mode - 0.11 Amps

PHYSICAL SPECIFICATIONS

- Weight (with batteries): 1.75 Pounds
- Dimensions: 8” H x 3” W x 6.5” L
- Housing Material: ABS
Serial Communications Protocol

An **RS-232 or RS-485 Serial Cable** is required for data communications to speed display boards, computers, and other electronic devices. The data connector is on the side of the unit.

Serial Port Connector 9-PIN D-CONN
Mating Connector RS-232 or RS-485

**Connector Signals:**
1. Aux Input
2. RS-232 TX
3. RS-232 RX
4. 6.6 Volts (OUT)
5. GND
6. Charger Input
7. RS-485-A
8. RS-485-B
9. Voltage Input

**BAUD Rate** 1200 to 38400 BAUD – default = 9600 BAUD
**Data Format** 8 Data Bits
No Parity
1 Stop Bit

**Serial Port Message Format**

**A and AP Format (Active Target or Peak Speed Only) – Resolution = ones**

<table>
<thead>
<tr>
<th>Byte #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speed hundreds digit (ASCII)</td>
</tr>
<tr>
<td>2</td>
<td>Speed tens digit (ASCII)</td>
</tr>
<tr>
<td>3</td>
<td>Speed ones digit (ASCII)</td>
</tr>
<tr>
<td>4+</td>
<td>Carriage Return (0x0D)</td>
</tr>
</tbody>
</table>

**A and AP Format (Active Target or Peak Speed Only) – Resolution = tenths**

<table>
<thead>
<tr>
<th>Byte #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>2</td>
<td>Speed tens digit (ASCII)</td>
</tr>
<tr>
<td>3</td>
<td>Speed ones digit (ASCII)</td>
</tr>
<tr>
<td>4</td>
<td>Decimal Point (0x2E)</td>
</tr>
<tr>
<td>5</td>
<td>Speed tenths digit (ASCII)</td>
</tr>
<tr>
<td>6+</td>
<td>Carriage Return (0x0D)</td>
</tr>
</tbody>
</table>
**Col Format (Last or Peak) – Resolution = ones**

<table>
<thead>
<tr>
<th>Byte#</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speed hundreds digit (ASCII)</td>
</tr>
<tr>
<td>2</td>
<td>Speed tens digit (ASCII)</td>
</tr>
<tr>
<td>3</td>
<td>Speed ones digit (ASCII)</td>
</tr>
<tr>
<td>4</td>
<td>ASCII Colon = 0x3A</td>
</tr>
<tr>
<td>5</td>
<td>ASCII Carriage Return = 0x0D</td>
</tr>
</tbody>
</table>

**Col Format (Last or Peak) – Resolution = tenths**

<table>
<thead>
<tr>
<th>Byte#</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speed hundreds digit (ASCII)</td>
</tr>
<tr>
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</tr>
<tr>
<td>3</td>
<td>Speed ones digit (ASCII)</td>
</tr>
<tr>
<td>4</td>
<td>Speed tenths digit (ASCII)</td>
</tr>
<tr>
<td>5</td>
<td>ASCII Carriage Return = 0x0D</td>
</tr>
</tbody>
</table>

The Col format (named for the colon in byte 4) duplicates the format of the legacy *STALKER* Sport gun.
- It never sends more than 25 speed messages per second (no faster than once per 40 ms).
- If the speed isn’t changing, it only sends a new speed message every 1/3 second as a “keep-alive” signal.
The **Leading Zero** setting affects formats A and AP:

When set to **SPAC** (default setting), ASCII spaces are used for leading zeros:

```
“500(CR)” or “500.0(CR)”
“ 50(CR)” or “ 50.0(CR)”
“  5(CR)” or “  5.0(CR)”
```

When set to **2Ero**, ASCII zeros are used for leading zeros:

```
“500(CR)” or “500.0(CR)”
“050(CR)” or “050.0(CR)”
“005(CR)” or “005.0(CR)”
```

When set to **nonE**, leading zero characters are not transmitted:

```
“500(CR)” or “500.0(CR)”
“50(CR)” or “50.0(CR)”
“5(CR)” or “5.0(CR)”
```

The **Message Termination** setting affects formats A and AP:

When set to **Cr** (default setting), each message is terminated with only a carriage return: (0x0D).

When set to **CrLF**, each message is terminated with a carriage return and a line feed: (0x0D, 0x0A).

When set to **u Cr**, each message is terminated with the speed’s units and a carriage return: “500MPH(0x0D)”.

When set to **u CL**, each message is terminated with the speed’s units, a carriage return and a line feed: “500MPH(0x0D0A)”.