Pro3s Operator Manual

stalker sport

professional sport radar

For a more detailed explanation of the Pro 3s's operation, please refer to the online owners manual, part #011-0325-00.

Download from: https://stalker.sport/pro-3s

Charging/powering up the unit

The Pro 3s is shipped with a protective cover over the battery terminals. Be sure to remove it before use. See photo on right.

The rechargeable Lithium-ion battery handle is not shipped fully charged. Charge the battery fully before use (about 3 hours).

To power up the unit, push the red **ON/OFF Key**.

Remove protective cover

Reading the display

Here is how the readings are displayed:

ROLLDOWN Velocity
The Rolldown Velocity is the speed of the ball just before it stops moving, and is shown in the upper right window.

PEAK Velocity
The Pro 3s measures the Peak (Release) Velocity of a ball and shows it as the larger number in the display window.

SPIN Rate
The Pro 3s measures the Spin Rate of a ball in RPM and shows it in the upper left display window.

Spin Rate

Rolldown

Peak Velocity

Default Settings

Range	4 – For maximum sensitivity
Direction	Inbound
Spin	Spin
Light	OFF
Wireless	App
Low Speed	50 mph (80 km/h)
High Speed	150 mph (241 km/h)
Unit	MPH
Auto-Clear Delay	After loss of target tracking, the radar holds the speeds on the display for 2 seconds before clearing.
Angle	0
Peak ON/OFF (Key)	ON - This shows ball release speeds.

Measuring Ball Spin

Measuring a ball's Spin Rate is more challenging than measuring its Velocity. Speed measurement is nearly instantaneous, whereas measuring ball rotation requires longer tracking of the ball's flight, followed by a complex calculation determining ball spin.
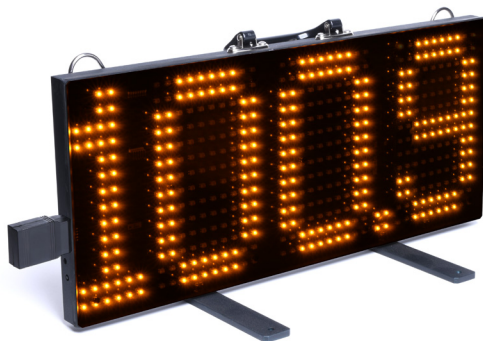
Occasionally the measurement angle, obstructions (net, fence, batter, etc.) or gun movement can interfere with a perfect view, resulting in a missed reading. A slight shift in position usually clears this up. Consult your owner's manual for other tips and guidelines.

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Stalker Pro 3s Quick Start Guide

Connecting to LED Speed Signs

Wireless Configuration

2 1/2-digit model
200-0778-00

3 1/2-digit model
(shown)200-0779-00

Wireless Module
200-1328-00

Turning the transmitter On/Off

The gray **TRANSMIT Key** is used to turn the transmitter ON/OFF.

ON (Constant transmit)
When ON, the gun is in Auto Transmit Mode and shows the Peak Velocities continuously without the need to press the trigger. **XMIT** is displayed in the lower left corner of the display. The Peak Velocity remains for 2 seconds after the target is gone. This setting is often used while the Pro 3s is mounted on a tripod.

OFF (Triggered transmit)
When OFF, the gun is activated by pulling the trigger. Peak Velocities will be shown while the trigger is depressed. The Peak Velocity remains for 2 seconds after the target is gone if the trigger is still depressed. Releasing the trigger while a Velocity is displayed holds the Velocity on the display until the trigger is pulled again.

Recalling speeds

The gray **RECALL Key** displays the last ten velocity readings that were measured. The most recently saved velocity shows first. Exit the Recall Mode by pressing the **RECALL Key** or by pulling the trigger. The recall queue is cleared when the unit is powered down.

The Pro 3s also remembers the highest Peak Velocity it has captured since it was turned on. Press and hold the **RECALL Key** for longer than 1/2 second to display the highest Peak Velocity.

Saving changes to settings

After making any changes to the gun settings, **BE SURE TO PULL THE TRIGGER ONCE TO SAVE**.

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Table of Contents

1. Introduction

Congratulations! You have purchased the most advanced - and accurate - sports radar available!

All you need to do to get started is to charge the battery, press the **ON/OFF Key**, and pull the trigger to start measuring velocities.

1.1 Real-Time Spin Rate Reading

Only Stalker has it.

Your new Stalker Pro 3s has something that no other radar gun has. It measures a ball's Spin Rate as quickly as it measures release and over-the-plate speeds. Spin Rate is a major influence in how a ball behaves during its flight. That makes Spin Rate an important data point in evaluating a pitcher, and your Pro 3s is the only radar in the stands that can measure it. You don't have to wait for a slow, video-analyzed approximation. You can consistently know the Spin Rate just as fast and accurately as you know the velocity.

1.2 How to Get the Best Spin Rate Readings with Your Stalker Pro 3s

Range: The first thing to be aware of is range. Although your Stalker Pro 3 will show velocity at up to 500 feet (152 meters), for most accurate Spin Rate, try to stay within 150 feet (45 meters) of the pitcher.

Visibility: Due to the complex readings necessary to display Spin Rate, the gun needs to see the ball for the majority of the flight from the pitcher to the catcher. The backstop, fence, netting, and players can alter the readings, so keep the gun steady and the ball in a clear line of sight.

Angle: In a perfect world, the pitcher would be throwing directly at the gun, but who wants a fastball flying at their head? So, in the real world, we need to be off to the side of the catcher or shooting above their head. Don't let your position be too far off to the side or too high, as this can impact readings.

That's it! Enjoy this amazing piece of technology and thank you for choosing Stalker Sport.

1.3 Directional - Measure Both Inbound and Outbound Velocity

Another thing that makes the Stalker Pro 3s unique is that it is a *directional* radar. It can tell the difference between targets moving toward it and targets moving away from it. And now you have a choice: your Stalker Pro 3s can capture Peak Velocities and Spin Rate at the same time *or* you can choose to capture Peak Velocities and Exit (Hit) Velocities simultaneously. So have fun! If it moves, you can measure it with the Pro 3s!

1.4 Wireless Technology

Your Pro 3s can communicate with a variety of devices by creating its own personal connection. To connect, locate the Stalker Pro 3s listed within your Stalker Sport App. For more wireless pairing information, see *Section 5.1.6 - Wireless Configuration.*

2. Stalker Pro 3s Overview

2.1   Screen and Key (Button) Locations

Display

Keypad

Fig 2.1

8-Pin Interface Connector Port

Trigger

Battery Release Latch

Battery Handle

Fig 2.2

Spin Rate

Rolldown

Peak Velocity

Fig 2.3

TRANSMIT Key

RECALL Key

PEAK Key

TRANSMIT

RECALL

PEAK

MENU

SELECT

ON/OFF

Fig 2.4

MENU Key

SELECT Key

ON/OFF Key
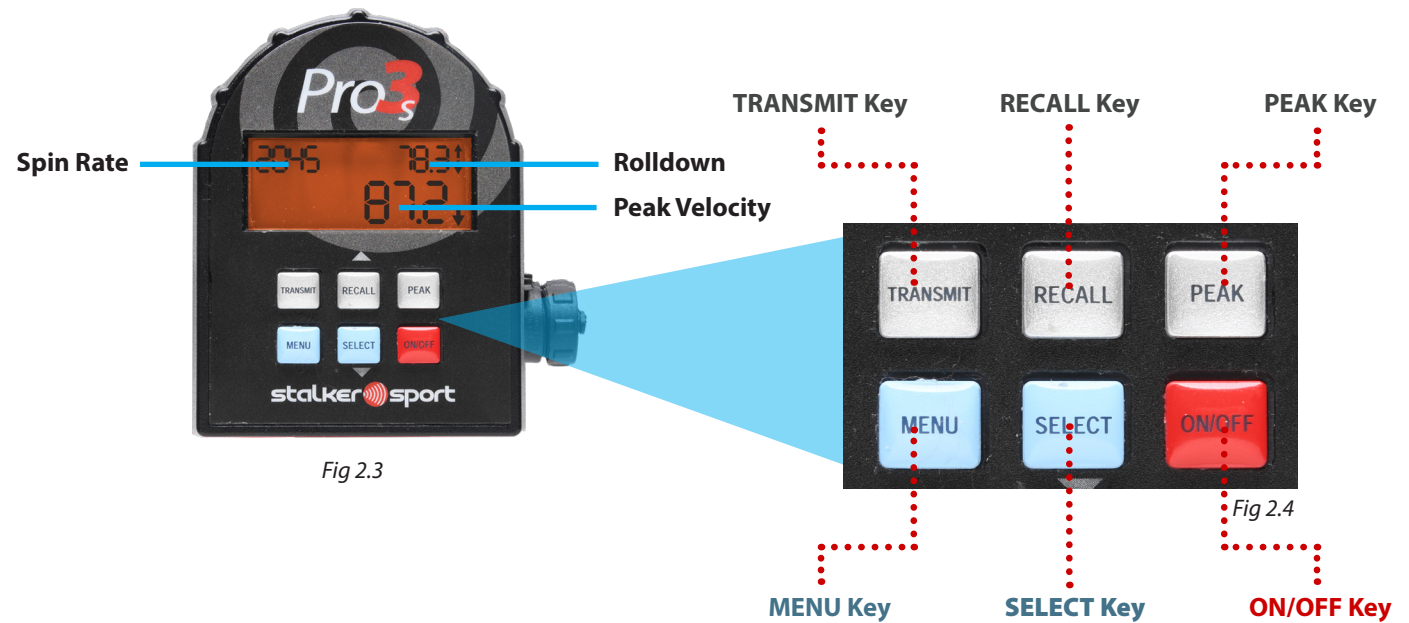
2.2   Key Terms and Definitions

Term	Definition
Exit (Hit) Velocity	The velocity after a change in direction, such as after a ball is hit by a batter
Peak Velocity	The maximum velocity achieved after release, such as right after a pitcher throws a ball
Rolldown	The velocity right before a major change in either velocity (such as just before a catcher catches the ball) or a change in direction (such as right before a batter hits the ball)
Spin Rate	The revolutions per minute (RPM) of the ball in air

Note: Recommended Radar Placement for Baseball

When measuring hit balls, testing has shown that placing the radar approximately 30 feet behind the plate yields the best results. Remember that hit balls will fly away from the radar in a wide range of angles. The speed of a line drive to center field will display more accurately than a hit toward first base, third base, or a high fly ball, which will have a larger angle errors.

3. Operating Your Pro 3s

3.1 Powering On Your Pro 3s

Power is supplied to your Pro 3s by a removable, rechargeable battery handle. The battery handle is not fully charged when shipped.

Remove the orange cover from the battery handle contacts (Fig. 3.1)**.** Charge for three hours before initial use.

Fig 3.1 -
Remove protective cover

Battery Release Latch

Fig 3.2 -
Install the Battery

Attach the handle to the radar body by inserting the front tip of the handle into the mating lip on the radar body, then pivoting the handle up until it is firmly seated. Rotate the Battery Release Latch to lock the battery into the slot in the back of the handle (Fig. 3.2).

Turn the gun ON by pressing the **ON/OFF Key** (Fig. 3.3). Squeeze the trigger to begin operating (transmitting). Learn more about the Pro 3s battery in *Section 4 - Powering Your Pro 3s*.

ON / OFF Key

Fig. 3.3 -
Turn your Pro 3s on

3.2 LCD Display Window

The LCD Display Window (Fig. 3.4)is used to display Velocity and Spin Rate data, and is also used to view menus (See *Section 5 - Operator Menu* and *Section 6 - Options Menu* for more information about configuring the settings of your Pro 3s).

3.2.1 Display Window Overview

Spin Rate or Exit (Hit) Velocity

Rolldown

Peak Velocity

Arrows

Fig. 3.4 -
LCD Display Window

(UPPER LEFT) 2045	**Spin Rate**, expressed in Revolutions Per Minute (RPM), displays here. The alpha-numeric characters in the upper left corner make up the **Message Window**. When Outbound **Exit (Hit) Velocity** is enabled, it will appear here in place of the **Spin Rate**. See *Section 3.2.1.1 - Choose Spin Rate or Exit Hit Velocity* for more information.
(UPPER RIGHT) 78.3	The four smaller digits in the upper right corner show the **Rolldown (across-the-plate) Velocity.**
(MAIN) 87.2	The four large digits display the **Peak Velocity.**
↕	Arrows indicate a tracked object's direction of travel. Up arrow indicates away from operator and down arrow indicates toward operator.

3.2.1.1 Choose Spin Rate or Exit (Hit) Velocity

The Pro 3s is a direction-sensing radar gun, which means that it can tell the difference between an approaching target, such as a pitch, and a receding target, such as a hit ball. Make your selection in the Operator Menu, and then the appropriate reading will be displayed in the Upper-Left of the Display Window. See *Section 5 - Operator Menu* for more information.

3.2.2   LCD Display Icons

Your Pro 3s will display a variety of additional messages on the Display Window depending on the Mode you select or the status of the gun.

Fig. 3.5 -
PEAK Icon

Fig. 3.6 -
STORE Icon

Fig. 3.7 -
LO BAT Icon

Fig. 3.8 -
XMIT Icon
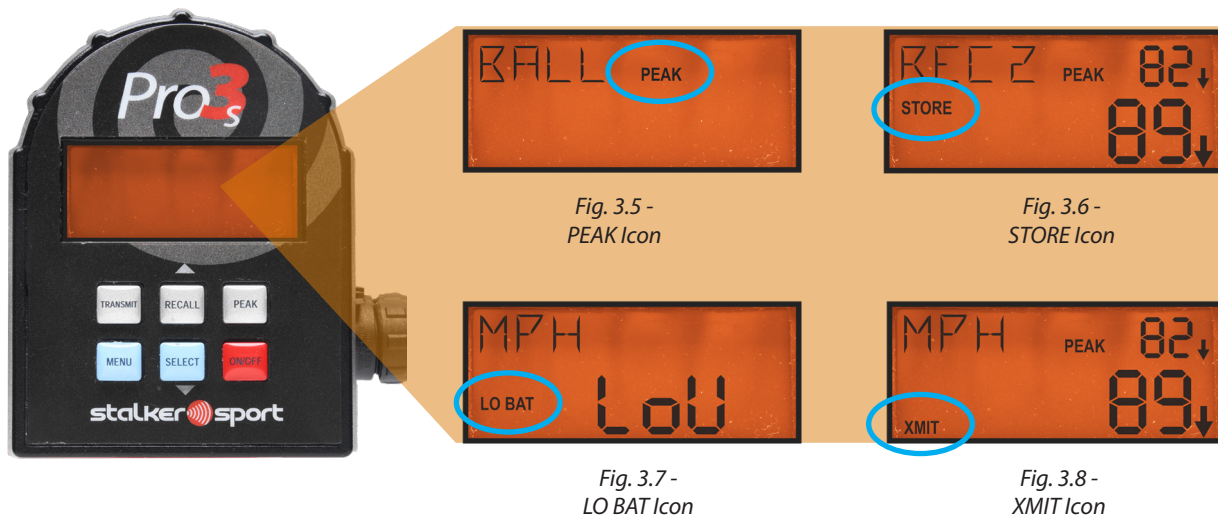
PEAK	Indicates that Peak Mode is "ON" allowing Peak Velocity display. Press the **PEAK Key** to enable or disable. Fig. 3.
STORE	Is on when recalling the highest Peak Velocity or Velocities from the **RECALL** queue. Fig. 3.6
LO BAT	Indicates the battery is low and needs recharging or replacement. LO BAT blinks when the battery is approaching exhaustion. Fig. 3.7
XMIT	Indicates the gun is transmitting and is able to take readings. Fig. 3.8

3.3   Keypad Controls

The six keys on the rear panel Keypad (Fig. 3.9) control the radar gun functions and configuration.

TRANSMIT Key   RECALL Key   PEAK Key

Fig. 3.9 - The Pro 3s Keypad

MENU Key   SELECT Key   ON/OFF Key
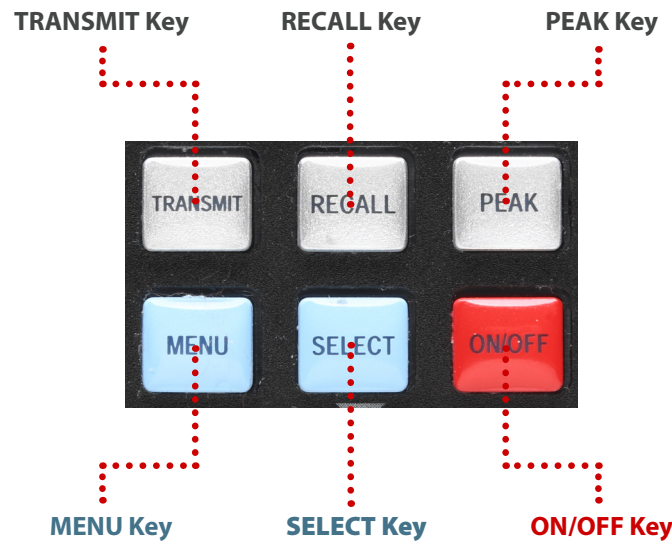
TRANSMIT	Toggles the transmitter ON and OFF (instead of the normal trigger activation). In Menu Mode, also used to move left one digit while in the PIN or WISIN Menu
RECALL	In Radar Mode, displays the highest Peak Velocity or the last 10 velocities recorded and stored. In Menu Mode, increases the setting for a chosen menu item.
PEAK	Turns ON or OFF the display of the Peak Velocity. In Menu Mode, this Key is also used to move right 1 digit while in the PIN or WISIN Menu.
MENU	Navigates the Menu System to choose a Menu item to be changed. While in Menu Mode, press and hold to enter the Options Menu.
SELECT	Decreases the setting for a chosen menu item.
ON/OFF	Turns the Pro 3s's power ON or OFF.

3.4   Changing Modes

To change settings, use the **RECALL** and **SELECT Keys** on the Keypad (Fig. 2.4) to configure the radar. The **MENU Key** navigates through the Menu Structure to choose a Menu Item. The **SELECT** and **RECALL Keys** change the settings for the chosen item. Refer to *Section 5 - Operator Menu* and *Section 6 - Options Menu* for more details on menus and their functions.

The gray **PEAK Key** enables or disables the **Peak Velocity** display.

3.5   Turning the Transmitter ON and OFF

The gray **TRANSMIT Key** is used to turn the transmitter ON/OFF.

ON (Auto / Constant Transmit)

When **ON**, the gun is in Auto Transmit Mode and shows the Peak Velocity continuously without the need to press the trigger. **XMIT** shows in the lower left corner of the display (Fig. 3.10). The Peak Velocity remains for 2 seconds after the target is gone, unless otherwise configured in the Auto Clear Delay Menu (See *Section 6.1.4 - Auto Clear Delay* for more details). This Mode is often used when the radar mounted is on a tripod.

Fig. 3.10 - Transmitter ON

OFF (Triggered Transmit)

When OFF, the gun is activated by pulling the trigger and the **XMIT icon** is not displayed until the trigger is pulled. (Fig. 3.11). Peak Velocities will be shown while the trigger is depressed. The Peak Velocity remains for 2 seconds after the target is gone if the trigger is still depressed. Releasing the trigger while a speed is displayed holds the speed on the display until the trigger is pulled again.

Fig. 3.11 - Transmitter OFF

> **Note:**
>
> When the gun **IS NOT** transmitting, the **XMIT Icon** is off (Figure 3.11). If velocities are present when the trigger is released, they will remain on the screen showing the last velocities registered. Pull the trigger again to clear the velocity windows and acquire a new target.
>
> When the gun **IS** transmitting, the **XMIT Icon** is on and the unit of measure displays in the message window (Figure 3.10).

3.6   Displaying Spin Rate

Your Pro 3s measures Spin Rate by default so there are no adjustments needed on the gun. As with other readings taken by the gun, the best location is within 150 feet of the ball, directly in front of or behind the ball's travel path. Activate the gun either by pressing the trigger or pressing the **TRANSMIT Key**. The Spin Rate in revolutions per minute (RPM) is displayed in the upper-left corner.

3.7   Displaying Peak Velocities

Use the **PEAK Key** to turn display of the Peak Velocity of targets **ON** or **OFF**. For example, when tracking a ball, the Peak Velocity is the same as the release / pitch velocity, since a ball only slows down after it is thrown.

Peak Mode OFF

When Peak Mode is **OFF**, the **PEAK icon** is off (Fig. 3.12). The live, changing ball Velocity shows in the upper right window, and the main window is blank (Figure 8).

Peak Mode ON

When Peak Mode is on, the **PEAK icon** appears. The highest velocity for each ball displays in the main window. The ball's Rolldown Velocity displays in the upper right window (3.13).

3.8   Displaying Highest Peak Velocity

Not only can you monitor the Peak Velocity for each target, the Pro 3s also remembers the highest Peak Velocity it has captured since it was turned on. Press and hold the **RECALL Key** for longer than ½ second to display the Highest Peak Velocity. The **STORE icon** turns on, and **MAX** flashes in the message window during this time. To clear the Highest Peak Velocity from the display, press and hold the **RECALL Key** again or simply pull and release the trigger.

3.9   Recalling Stored Velocities(10 maximum)

The gray **RECALL Key** re-displays the last ten velocity readings that were measured. Velocities are added to the recall queue either:

- when the trigger is released (the last velocities displayed will also be saved on the display until the next trigger pull),

- when they are cleared from the display after the **Auto Clear Delay** has expired (see *Section 6.1.4 - Auto Clear Display* for more information),

<or> • two seconds after the target is lost if the **Auto Clear Delay** is set to OFF (see *Section 6.1.4 - Auto Clear Display* for more information).

The last ten groups of stored Peak Velocities, Rolldown Velocities, Exit (Hit) Velocities and/or Spin Rates display in a sequential manner with successive brief presses of the **RECALL Key**. The Message Window Display cycles through the recall number, speed units, and Exit (Hit) Velocities or Spin Rates (Fig. 3.14). The **STORE icon** is on while recalled velocities are displayed.

Live ball velocity
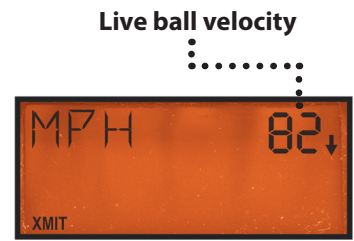
*Fig. 3.12 -
PEAK Mode OFF*

Rolldown Velocity
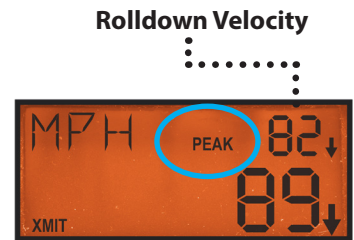
*Fig. 3.13 -
PEAK Mode On*

*Fig. 3.14 -
Recalling Stored Velocities*

The most recently saved velocity group shows first. Pressing the **RECALL Key** briefly once more while the last velocity group in the queue is displayed exits Recall Mode. Exit the Recall Queue at any time by pulling the trigger.

The Recall Queue is cleared whenever the unit is powered off.

3.10 LCD Backlight

The Pro 3s display has a backlight that may be used in low light conditions. It is turned on or off in the Operator Menu. See *Section 5.1.4 - Backlight On/Off* for more details.

4. Powering Your Pro 3s

4.1 Providing Power to the Pro 3s

You can power your Pro 3s using the included rechargeable lithium Ion battery, or you can purchase the optional Battery Wall Charger.

Battery Handle - The Pro 3s's handle is a removable, rechargeable lithium ion battery. Attach the battery handle to the radar body by inserting the front tip of the handle into its mating lip on the radar body and rotating the back of the handle toward the body until seated. Next, rotate the thumb latch to engage the ramping slot in the back of the handle.

External - To power the Pro 3s from an external 12VDC (nominal) source, use the optional 12VDC CIG Cable attached to the 8-Pin Interface Connector on the side of the gun (See Fig. 2.2 for the location of this port). The battery handle does not need to be attached to the gun body when running under external power. If it is attached, the 12VDC CIG Cable also charges the battery handle while it is supplying power to the radar, whether the unit is turned on or off. The unit does not enter Sleep Mode as long as external power is connected.

4.2 Charging the Battery Handle

The battery handle may be charged while attached to the gun body via the Wall Charger or Cigarette Cable Charger, or when detached using an optional Desktop Charger.

4.2.1 Wall Charger

While attached to the gun, the battery handle may be charged from 90-250VAC house current with a wall adapter (Fig. 4.1) The battery handle charges whether the gun is turned on or not.

4.2.2 Cigarette Plug Charger

You can charge your battery with a 12 VDC (nominal) source, aka, a "cigarette lighter." Use the optional (nominal)12 VDC Cigarette Cable (Fig. 4.2). The battery handle charges whether the gun is turned on or not.

Fig. 4.1 -
The Pro 3s shown with the optional Battery Wall Charger Cable Set

Fig. 4.2 -
12VDC Cigarette Charging Cable

4.2.3 Desktop Charger

When the battery handle is removed from the Pro 3s body, you can use the optional Battery Handle Charger to charge it (Fig. 4.3). Power the charger from 90-250VAC house current with the wall adapter, or use the optional 12VDC Cigarette Cable (Fig. 4.4).

4.3 Operational Time Using

Fig. 4.3 -
Optional Desktop Charger with 90-250VAC adapter (shown with battery, not included)

Fig. 4.4 -
Desktop 12 VDC Cigarette Charging Cable

> ⚠️ **SAFETY WARNING**
>
> *Since the charger monitors the battery temperature to prevent damage to the battery, the battery must not be hot or cold while charging. Install a battery on the charger by inserting it into the mating battery connector in a manner similar to attaching it to the radar body. The charging cycle will automatically start when the battery is connected, and the green indicator should glow indicating that the battery is being quick charged. Quick charging should take about 3 hours to complete. After quick charging is complete, the green indicator will extinguish. For longest battery life and best service, batteries should only be charged in an environment where the temperature is between 32°F and 104°F (0°C and 40°C).*

the Battery Handle

The Pro 3s draws the most current when it is transmitting, so the run time depends upon how often the radar transmitter is on. The Pro 3s also has a Sleep Mode to conserve battery life when it is not being operated. When operating on battery power, the Sleep Mode is automatically initiated after 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.

Type of Operation	High Capacity 3700 mAh Battery
Continuous Transmitting	4.5 Hours
Typical Trigger Operation	11-13 Hours

4.4   Low Battery Warning

The **LO BAT icon** blinks when the battery runs low (Fig. 4.5). The Pro 3s 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 or change the battery handle.

Fig. 4.5 - Low Battery

4.5   Auto-Shutdown Feature

The Pro 3s has a 30-minute timeout auto-shutdown feature. After 30 minutes in Sleep Mode, the Pro 3s automatically shuts off.

4.6   Monitoring Battery Life

A Battery Charge Monitor is available as the 5th item in the Operator Menu and indicates status: charging (**Chgg**), charged (**Chgd**) or no external voltage present (**On**). If external voltage is supplied but no battery handle is attached, the main window shows **nonE**. For more information about the Battery Charge Monitor or the Operator menu, see *Section 5 - Operator Menu.*

4.7   How to Save Battery Life

• Since the transmitter has the highest current draw, turn it 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 mount your Pro 3s on a tripod and use the Constant Transmit Option, turn the transmitter off between sessions. See **Section 3.5 - *Turning the Transmitter OFF and ON*** for more information.

> ***Notes:***
>
> *• The charger senses battery temperature to prevent damage to the battery. As a result, it may refuse to charge a battery that is too hot or cold. If this occurs, allowing the battery to stabilize in a room temperature environment for a few minutes should correct the problem.*
>
> *• Battery performance and longevity will be greatly reduced if it is exposed to temperatures over 125°F (52°C).*
>
> *• Batteries do NOT need to be fully discharged prior to charging. The battery will last longer if recharged frequently.*

5. Operator Menu

The **Operator Menu** is short and contains items that a user is most likely to change while operating the gun.

While in Radar Mode, briefly press the blue **MENU Key** to enter the Operator Menu where the first item and its setting are displayed.

Then briefly press the **MENU Key** to step through the menu items and display their settings. Change the setting for an item while it is displayed by pressing the **SELECT** or **RECALL Key.**

Pull the trigger at any time while in Menu Mode to return to Radar Mode. Any changed menu settings are stored in non-volatile memory when the trigger is pulled so that they are remembered the next time the Pro 3s is turned on. If the Pro 3s is turned off while in Menu Mode, any edits to your settings will not be remembered.

> *Remember:*
>
> *Always pull the trigger after you make edits in the Operator Menu to save your desired settings.*

5.1 Operator Menu Items

The factory default for each Menu Setting is indicated in bold in the Operator Menu table below.

Menu Item *(briefly press MENU key to step down)*	Item Description	Item Legend	Item Settings *(in main window)* (**bold** indicates factory default)
1	Range	RANGE	**4**, 1, 2, 3
2	Target Direction	DIR	**Inb**, Outb
3	Spin/Hit Speed Enable	SP-Hz	**SP in**, H it, OFF
4	Backlight On/Off	LIGHT	**OFF**, On
5	Battery Charge Monitor	BATT	**On**, nonE, Ch99, Ch9d
6	Wireless Configuration	WI EN	**APP**, OFF, S i9n
7	Wireless Sign ID	WISIN	0000-9999
8	Wireless Pairing Pin	PIN	0000-9999

5.1.1   Range

The Range Setting affects the sensitivity (clocking distance and target size) of the radar.

- **4** - Setting the range to 4 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. It is also able to "see" smaller targets. This is the default setting.

- **3** or **2** - Setting the range to 2 or 3 sets the gun to a medium range in its clocking distance.

- **1** - Setting the range to 1 decreases the gun's sensitivity and shortens its clocking distance. The range 1 setting is handy for clocking objects close to the gun and when you want to restrict the gun from "seeing" smaller objects or objects farther out in the background.

5.1.2   Target Direction

The Pro 3s can be configured to monitor outbound targets (**Outb**) or inbound targets (**Inb**). The default setting is **Inb**.

5.1.3   Spin/Hit Speed Enable

The default setting is **SPin**. If paired to the Stalker Sport App, while using the "Hitting" Action from within the App, the setting of **Hit** must be showing on the radar gun. For help with navigating the Stalker Sport App settings, visit **https://stalker.sport/stalker-sport-app-videos**

5.1.4   Backlight On/Off

This menu item turns the display's backlight **ON** or **OFF.** Independent of this setting, the backlight always turns off while the unit is in the power-saving Sleep Mode. This is usually the only indication that the Pro 3s has gone to sleep. The default setting is **OFF.**

5.1.5   Battery Charge Monitor

The 5th Operator Menu item is a monitor only. It does not actually configure a feature setting; instead, it shows the charge status of the battery handle.

- If the Pro 3s is operating on battery only (with no external voltage supplied to the side connector)**, BATT** displays in the Message Window and the main window shows 𝟎𝗻.

- • If external voltage is supplied and a battery handle is attached, the main window shows the charging status: **Chgg** (charging) or **Chgd** (charged).

- • If external voltage is supplied but no battery handle is attached, the main window shows **nonE** since there is no battery.

5.1.6   Wireless Configuration

This setting is used to configure your device's wireless settings, as follows. The default setting is **APP.**

- **OFF** - disables wireless operation.

- **Sign** - enables sending velocity messages to a Stalker Radar Speed Sign equipped with a Stalker Radar Wireless Dongle.

- **App** - enables wireless communication with up to 10 devices simultaneously via the Stalker Sport App.

5.1.7   PIN - Wireless Paring for the Stalker Sport Radar App

This menu item is only shown in the Operator Menu if the Wireless Configuration is set to APP. It is used during the wireless pairing process and can be set to any number between 0000-9999. The default PIN is the last 4 digits of the gun's serial number, located near the battery release latch. See *Section 5.1.6 - Wireless Configuration* for more information about this setting.

5.1.8   WISIN - Wireless Paring for Signs

This menu item is only displayed in the Operator Menu if the Wireless Configuration is set for **Sign**. Set this value to match the last 4 digits of the serial number found on the Stalker Radar Wireless Dongle connected to your Stalker Radar Speed Sign. See *Section 5.1.6 - Wireless Configuration* for more information about this setting.

> *Remember:*
>
> *When setting multi-digit numbers, such as the PIN or WISIN, the* **TRANSMIT** *and* **PEAK Keys** *can be used to select a specific digit. To increase or decrease, use the* **RECALL** *and* **SELECT Keys**.

6. Options Menu

The Options Menu contains items that are not likely to be changed during a user session.

Enter the Options Menu from the Operator Menu by pressing and holding the **MENU Key** for longer than ½ second.

Change a Menu Item's settings using the **SELECT Key** to revert to the previous setting or the **RECALL Key** to advance to the next setting.

When setting multi-digit numbers, such as **Low Speed** or **High Speed**, the **TRANSMIT** and **PEAK Keys** can be used to select a specific digit to increase or decrease using the **RECALL Key** and the **Select Key.**

Briefly pressing the **TRANSMIT Key** moves the cursor to the left of the current digit, and briefly pressing the **PEAK Key** moves the cursor to the next digit on the right.

A section describing each menu item follows the table below.

Pull the trigger at any time to save any changes and exit the menu.

TRANSMIT Key   RECALL Key   PEAK Key

MENU Key   SELECT Key   ON/OFF Key
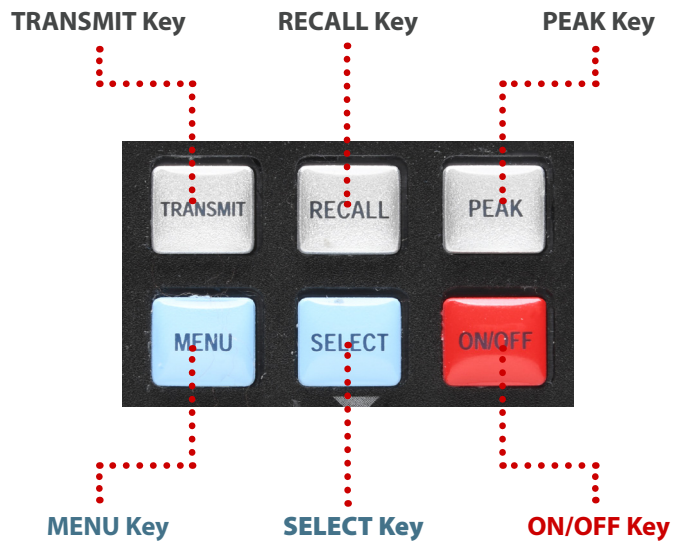
Remember:

Always pull the trigger after you make edits in the Options Menu to save your desired settings.

6.1 Options Menu Items

Menu Item *(briefly press MENU key to step down)*	Item Description	Item Legend *(in Message Window)*	Item Settings *(in main window)* (**bold** indicates factory default)
1	Low Velocity	LOW	0 - 150 (mph) 0 - 241 (km/h) **Default: 50 mph**
2	High Velocity	HIGH	0 - 150 (mph) 0 - 241 (km/h **Default: 150 mph**
3	Units	MPH, KM/H	Unit
4	Resolution	RES	**onES**, tnth

5	Auto Clear Delay	CLEAR	0SEC, 1SEC, **2SEC**, 3SEC, 4SEC, 5SEC, 6SEC, 7SEC, 8SEC, 9SEC, 10SE, 20SE, 30SE, OFF
6	Trigger Function	TRIG	**Con**, SS, Loc
7	Cosine Angle	ANGLE	**0** - 45
8	Serial Port Speed	BAUD	12, 24, 48, **96**, 192, 384, 576, 1152
9	Serial Port Format	FOR	-, A, A1, **bE**, Co1
10	Format A Speed	A SPD	LASt, **PEA**, SPin, Hit
11	Peak Message Type	PKMSG	**Cont**, Sing
12	Leading Zero	LEADO	ZEro, **SPAC**, nonE
13	Message Termination	TERM	**Cr**, CrLF, u Cr, u CL
14	Reset	RESET	YES, **no**
15	Reset Confirmation	SURE?	YES, **no**

6.1.1 Low Velocity and High Velocity

To filter out unwanted targets, use the Low and High Velocity Settings to select the minimum and maximum velocities that you want your Pro 3s to capture. If a target's velocity is above or below the selected velocities, the radar will not capture its speed. Due to conversions and processing methods, velocities within 1-2 MPH (2-3 km/h) from the setting values may be reported.

The range of both settings is 0 to 150 mph (0-241 km/h). Because selecting a value in such a large range would be tedious if you were forced to press the **RECALL Key** (increase) or **SELECT Key** (decrease) for each step, the **TRANSMIT** and **PEAK Keys** can be used to select the specific digit you want to increase or decrease. Briefly pressing the **TRANSMIT key** moves the cursor to the left of the current digit, and briefly pressing the **PEAK Key** moves the cursor to the next digit on the right.

When monitoring in a high-speed range indoors, don't be surprised to see "velocities" generated by fluorescent lights, other electrical sources, moving/rotating objects, or vibrating objects. Because of the great sensitivity of the Pro 3s, indoor use will usually require a lower Range setting of between 1-3. See *Section 5.1.1 - Range* for more information.

6.1.2   Units

The available units of measure are:

- **MPH** – Miles per hour. This is the default setting.

- **KM/H** – Kilometers per hour

6.1.3   Resolution

You can choose to display your velocity rounded to the nearest whole number, or you can have it displayed in tenths of a unit for a more exact measurement.

- Select **onES** to display velocity in whole units, such as 25 mph. This is the default setting.

- Select **tnth** to display velocity in tenths, such as 25.4 mph.

6.1.4   Auto Clear Delay

Choose how long the last captured velocity is shown on the display screen before it clears. The default is 2 seconds **(2SEC)**. If set for **OFF,** the last velocity displayed stays on the screen until the next velocity is acquired. This delay also applies to velocities reported in messages sent out wirelessly or by cable via the serial port, such as velocities displayed on a connected Stalker Radar Speed Sign.

6.1.5   Trigger Function

You can choose to have your Pro 3s constantly ("automatically") capture any velocities that occur after pulling the trigger once (Continuous Mode), or you can choose to manually pull the trigger to start and stop capturing velocities (Start-Stop Mode).

- Con – Continuous trigger operation: Pull the trigger to turn on the transmitter and release it to turn off the transmitter. This is the default setting.

- **SS – Start-Stop trigger operation**: Pull and release the trigger to turn the transmitter on. Pull and release it again to turn off the transmitter.

- **Loc** – When the transmitter is turned on using the **TRANSMIT Key** on the rear panel, the Trigger Function setting is automatically set to **Loc**. Likewise, if the Trigger Function menu setting is changed from **Con** or **SS** to **Loc**, the transmitter is automatically turned on as if the **TRANSMIT Key** had been pressed.

6.1.6   Cosine Angle

The accuracy of Velocity and Spin measurements captured by the Pro 3s is dependent on accurately setting the angle of the gun to the target. The Cosine Angle setting allows you to input exact angle settings of your gun's location in one-degree increments in the range of 0-45 degrees. The default setting is 0 degrees. For more information about Cosine Angle and the Pro 3s, refer to *Section 8.2 - Angle Errors.*

6.1.7   Serial Port Speed

This setting configures the baud rate for data transmitted from the serial port. The available settings are 1200 (12), 2400 (24), 4800 (48), 9600 (96), 19200 (192), 38400 (384), 57600 (576), and 115200 (1152). The default is 9600. **We would recommend not changing this setting,** but if you do, refer to *Section 7 - Exporting Velocity Data From the Pro 3s* for more details.

6.1.8   Serial Port Format

The Pro 3s can transmit speed and status information out the serial port in different formats for different applications. *Refer to Section 7 - Exporting Velocity Data from the Pro 3s* for more details on the message contents.

- **bE** – The "**bE**" format can report multiple velocities in each message (Peak Velocities, Rolldown Velocities, Exit (Hit) Velocities and/or Spin Rates) as well as configuration and status information. This is the default setting.

- **"-"** – The "**dash**" setting turns the serial port off. No data is transmitted.

- **A** – The "**A**" format is a simple ASCII format which reports a single speed in each message packet. A Pro 3s configured to stream data in this format can connect directly to any serial printer, PC, or display sign, such as the Stalker LED Speed Sign, that receives ASCII data.

- **A1** – The "**A1**" format is exactly like the "A" format except that a character for the thousands digit is added. Use this format to stream Spin Rates, as they are usually four digits long.

- **Col** – The "**Col**" (or colon) format is an alternate ASCII format that reports a single velocity. It matches the format of messages from legacy Stalker sport guns. The **Peak Velocity** is reported if **Peak Velocities** are enabled (See *Section 3.3 - Keypad Controls*). Otherwise, the Rolldown Velocity is reported.

6.1.9   Format "A" Speed

This menu item is only displayed in the Options Menu if the Serial Port Format is set for the A or A1 Format.

It is used to select the velocity to be transmitted in the data message: the last live speed (**LASt**), the Spin Rate (**SPin**), the Peak Velocity (**PEA**) or the Exit (Hit) Velocity (**Hit**). **PEA** is the default setting.

Remember, since Spin Rate is usually four digits, you must select Format A1 in the Serial Port Format Menu. Spin Rate is not sent out in Format A. (See *Section 6.1.8 - Serial Port Format* for more information).

6.1.10 Peak Message Type

This menu item is only displayed in the Options Menu if the Serial Port Format is set for A or A1 Format <u>and</u> the Format A Speed is set for PEA.

This setting allows you to select how frequently the Pro 3s sends out Peak Velocity measurements.

- **Cont – Continuous:** the radar continually streams out A Format messages containing the Peak Velocity at the rate of over 46 messages per second. This is the default setting.

- **Sing – Single:** the radar sends only one A Format message containing the Peak Velocity for each acquired target. This setting could be used if the radar is connected to a printer so that each pitch's release velocity is printed only once, for example.

6.1.11 Leading Zero

This menu item is only displayed in the Options Menu if the Serial Port Format is set for A, A1 or bE Format.

The Leading Zero setting allows you to choose if Leading Zeros are added to numbers that are less than three digits long when velocities are transmitted out through the serial port. The options are:

- **2Ero** - ASCII zeros are used for leading zero characters.

- **SPAC** – ASCII spaces are used for leading zero characters. This is the default setting.

- **nonE** – For the A or A1 Format, leading zero characters are not transmitted, and the message length is reduced by the number of skipped zeros.

The chart below show how one-digit, two-digit, and three-digit speeds would appear on a speed sign or printout using each of the above settings.

For the bE format, ASCII spaces are used for leading zeros (as above for the SPAC setting) because the bE format uses fixed length fields.

6.1.12 Message Termination

Target Velocity	2Ero	SPAC	nonE
5 mph or km/h	005	5	5
50 mph or km/h	050	50	50
500 mph or km/h	500	500	500

This menu item is only displayed in the Options Menu if the Serial Port Format is set for the A or A1 Format.

The Message Termination Setting defines the way each A/A1 Format message is terminated. Examples below show the ASCII string that would be sent with each setting for a 100-mile-per-hour speed message. The 0x0D and 0x0A nomenclature used below represents the hexadecimal values used in serial data transmission to control a printer or display cursor position. The 0x0D character represents a "carriage return" which moves the cursor back to the first character in the current line. The 0x0A character represents a "line feed" which moves the cursor down to the next line.

Message Termination Options:

Option	Function	ASCII String
Cr	Each message is terminated with only a carriage return. This is the default setting.	"100(0x0D)"
CrLF	Each message is terminated with a carriage return followed by a line feed.	"100(0x0D,0x0A)"
u Cr	Each message is terminated with the speed's unit of measure followed by a carriage return.	"100MPH(0x0D)"
u CL	Each message is terminated with the speed's unit of measure followed by a carriage return and then a line feed.	"100MPH(0x0D,0x0A)"

6.1.13 Reset and Reset Confirmation

Use the following steps to reset the radar to factory default settings.

1. Set **RESET** to **yES**. The screen will then display the words **RESET** and **SURE?**.

2. Set **SURE?** to **yES**. Pull the trigger to exit all menus and change all settings back to factory defaults.

3. To exit without forcing factory defaults, set **RESET** and **SURE?** to **no** and pull the trigger.

6.2   Recommended Settings for Baseball

While the Pro 3s can be used to measure velocities for many sports, many Pro 3s owners use their radar gun for baseball. For most baseball-specific use cases, we recommend the following settings:

Setting	See Section	Recommended Configuration
Low Speed	6.1.1	50 mph (80 km/h)
High Speed	6.1.1	150 mph (241 km/h)
Range	5.1.1	4 - For Maximum Sensitivity
Peak ON/OFF	3.2	ON - This shows ball release speeds
Auto-Clear Display	6.1.4	2 Seconds - After loss of target tracking, the radar holds the velocities on the display before clearing them

7. Diagnostic Mode

The Pro 3s has a Diagnostic Mode in which the user can determine internal unit status and test basic target acquisition capabilities.

After the unit powers up and enters Radar Mode, press the **MENU Key** for longer than ½ second (press & hold) to enter the **Diagnostic Mode** where the unit displays its version of software. This version screen will timeout after two seconds and the unit will automatically return to Radar Mode. Briefly press the **MENU Key** before the two-second timeout to step through the other diagnostic screens described in detail below. Pull the trigger at any time while in Diagnostic Mode to return to Radar Mode.

7.1 Entering Diagnostic Mode

Enter the Diagnostic Mode while in Radar Mode as described above by pressing and holding the **MENU Key**. An alternate method of entry into the Diagnostic Mode is to briefly press the **MENU Key** immediately after powering up the unit while all of the display segments are on.

The first display screen in Diagnostic Mode is the **Version Screen** where the version of the operating code is displayed. For example, in Fig. 8.1, the unit is loaded with Pro 3s Version 1.0.0.

*Fig. 8.1 -
Version Screen*

Briefly press the **MENU Key** while the version is displayed to enter the **Fork Diagnostic**. The transmitter is turned on automatically and all directionality, filtering, and special target processing is turned off so that any target moving in the range of 25-100 mph (40-161 km/h) will be displayed. A ringing tuning fork held in front of the radar should produce a steady velocity display. (Fig. 8.2)

*Fig. 8.2 -
Fork Screen*

Briefly press the **MENU Key** while in the Fork Diagnostic to enter the **Voltage Monitor Diagnostic**. The radar gun can be powered from the battery handle voltage or from external voltage, and the Voltage Monitor Diagnostic displays whichever of these two voltages is higher as in the following examples: (Figs. 8.3 and 8.4). Voltages are displayed in hundredths of volts. 720 on the screen means 7.20 volts.

Briefly pressing the **MENU Key** cycles the unit through the diagnostics. Pull the trigger at any time to exit Diagnostic Mode and return to Radar Mode.


*Fig. 8.3 -
Voltage Monitor Diagnostic*

*Fig. 8.4 -
Voltage Monitor Diagnostic*

7.2 Angle Errors

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

All radar guns work on the Doppler principle and return the most accurate readings when clocking objects moving directly toward or away from the gun. Clocking at an angle results in angle error, and the gun displays a velocity that is **LOWER** than the actual velocity.

7.3 Radar Gun Placement
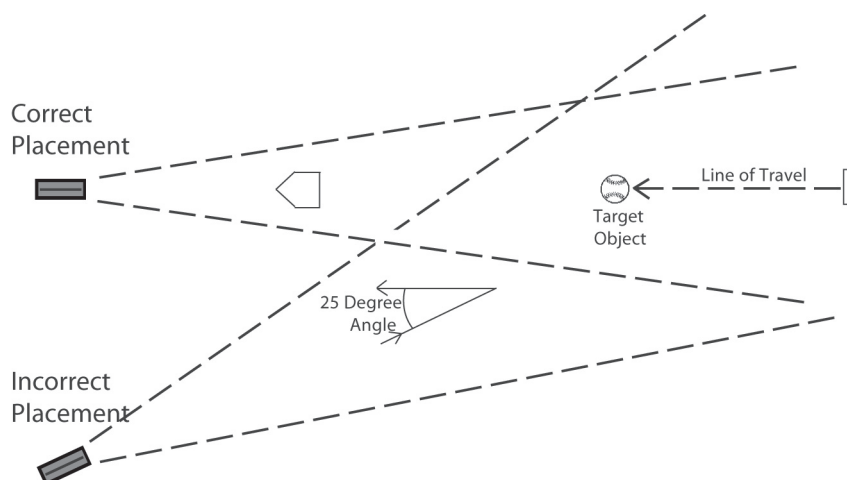
At slight angles the error is very small; however at larger angles, the error becomes substantial as the table below shows.

7.4 Cosine Angle Error Chart

	0 Degrees	5 Degrees	10 Degrees	15 Degrees	30 Degrees	45 Degrees	90 Degrees
True Speed	0% Error	0.4% Error	1.5% Error	3.4% Error	13.4% Error	29.3% Error	100% Error
25.0 mph	25.0 mph	24.9 mph	24.6 mph	24.1 mph	21.7 mph	17.7 mph	0 mph
50.0 mph	50.0 mph	49.8 mph	49.2 mph	48.3 mph	43.3 mph	35.4 mph	0 mph
75.0 mph	75.0 mph	74.7 m[h	73.9 mph	72.4 mph	65.0 mph	53.0 mph	0 mph
100.0 mph	100.0 mph	99.6 mph	98.5 mph	96.6 mph	86.6 mph	70.7 mph	0 mph
125.0 mph	125.0 mph	124.5 mph	123.1 mph	120.7 mph	108.3 mph	88.4 mph	0 mph
150.0 mph	150.0 mph	149.4 mph	147.7 mph	144.9 mph	129.9 mph	106.1 mph	0 mph
200.0 mph	200.0 mph	199.2 mph	197.0 mph	193.2 mph	173.2 mph	141.4 mph	0 mph
250.0 mph	250.0 mph	249.0 mph	246.2 mph	241.4 mph	216.5 mph	176.8 mph	0 mph

7.5   Calculating Angle Errors

If you know the angle at which you are clocking, you can manually calculate the actual velocity 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, divide 129.9 by the cosine of 30 degrees (0.866) to get a true speed of 150.0 mph.

7.6   Compensating for Angle Errors

You can configure the Pro 3s to compensate for angle error by changing the Cosine Angle setting in the Options Menu (See *Section 6 - Options Menu* for more information). In the above example, if the Cosine Angle setting is 30, the gun will display 150.0 mph, and no manual calculations are necessary. The accuracy of the corrected speed is directly dependent on the accuracy of the estimated angle error that you have set using the Options Menu.

8. Interference Problems

8.1   Interference Frequencies

The STALKER Pro 3s radar transmits at a frequency of 34.7 GHz (34,700,000,000 Hz) using a directional Ka-Band Transmitter. The receiver is designed to read the Doppler frequency (the change in frequency) which is much lower and lies between 100 Hz and 83,000 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.

8.2   What Does Interference Do?

Interference can cause a radar gun to provide 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.

For example, in baseball a loss of sensitivity can cause the radar gun to be unable to "see" far enough away to get the ball velocity exactly at the moment when the ball leaves the pitchers 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 Velocity registers lower than the actual release velocity.

8.3   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.

8.4   Ways to Eliminate Interference

If you are experiencing erroneous readings, try these solutions:

- Change your position to affect where the gun is aimed.

- Lower the sensitivity by changing the Range in the Operator Menu to a lower setting.

- If the erroneous readings are at low speeds (often interference from nearby motors) change the Low Speed setting in the Options Menu to a setting with a higher cutoff to completely eliminate all readings below the set speed. Likewise, if the erroneous readings are at high speeds, change the High Speed setting to a lower cutoff.

8.5   FCC Requirements

The Federal Communications Commission requires that all transmitting equipment carry a Grant of Type Acceptance. The STALKER Pro 3s is Type Accepted by the FCC under Type Acceptance number IBQACMI002. The FCC also requires that an operating license be obtained by the user of the equipment.

9. Service Information

9.1 A Check List Before Servicing the Pro 3s Radar

Check the Settings - If you are having a problem with your Pro 3s, first make sure that the settings are correct for your application. Call Customer Service at 1-877-STALKER if you need help with this.

Check the Battery - If the Pro 3s does not turn on, the problem is usually with the battery handle. Try charging the battery handle.

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.

9.2 Factory Service Center Address

Applied Concepts, Inc.
Attn. Repair Department
855 East Collins Blvd.
Richardson, TX 75081

Toll Free: 1-877-STALKER
Phone: (972) 398-3780
Fax: (972) 398-3781

https://stalker.sport

9.3 Warranty Information

The Pro 3s radar is covered for Two (2) Full Years, 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, attempted repairs or modifications by an unauthorized service agent, or any other unusual treatment.

10. Stalker Pro 3s Specifications

10.1 Performance Specifications

Velocity Range	1 – 150 mph
Accuracy	± 3% of reading In onES resolution, round to the nearest integer; In tnth resolution, round to nearest tenth.
Max. Clocking Distances	300-500 feet for balls with unobstructed view
Max. Spin Measuring Distance	200 feet

10.2 Microwave Specifications

Operating Frequency	34.7 GHz (Ka-Band) ± 50 MHz
Polarization	Circular Polarization
3 dB Beam width	12 Degrees Nominal (± 1°)
Microwave Source	Gunn-Effect Diode
Receive Type	Schottky Barrier Mixer Diode
Power Output	10 Milliwatts Minimum 25 Milliwatts Nominal 50 Milliwatts Maximum

10.3 General Specifications

Product Type	Stationary Doppler Radar
Computer Processor	ARM Processor
Display Type	Liquid Crystal
Operating Temperatures	-30°C to +70°C (-22°F to +158°F)
Storage Temperatures	-40°C to +85°C (-40°F to +185°F)

10.4 Electrical Specifications

Battery Capacity	7.4 VDC, 3.7 Ah, Li-Ion
Current Requirements	Transmitting - 0.54 Amps
(At 7.4 Volts DC)	Standby - 0.22 Amps Sleep Mode - 0.09 Amps

10.5 Physical Specifications

Weight (with battery handle)	2.15 Pounds
Dimensions	7.35" H x 2.83" W x 7.9" L
Housing Material	Aluminum and Magnesium

10.6 FCC Specifications

The STALKER Pro 3s Complies with Part 90 of the FCC rules. FCC ID #IBQACMI002.

https://Stalker.Sport

011-0325-00 Rev A

800-STALKER