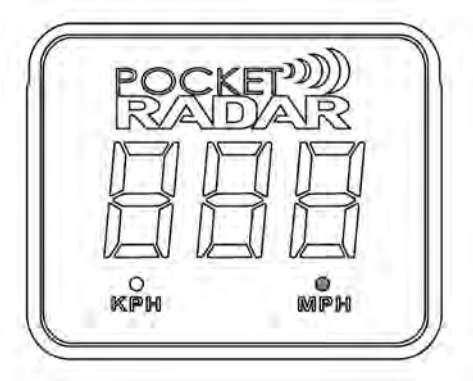

Smart Display

SD2010

USER MANUAL & GUIDE

For use with **Pro Radar Module** (model RM1510)
or with **Smart Coach radar** (model SR1100)

www.PocketRadar.com

Preliminary

Pocket Radar, Inc.

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POCKET RADAR™

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INTRODUCTION

Congratulations! You are now the owner of the most flexible, pro performance speed display on the market. Innovative technology places the Pocket Radar's Smart product line at the forefront of the sports and analytics revolution by providing accurate and instant feedback.

The Smart Display is compatible with multiple Pocket Radar devices, including the Smart Coach radar and the Pro Radar Module. The Smart Display is viewable to over 100 feet in bright sunlight, with a wide viewing angle and full 3 digit display. Lightweight and ultra-portable for indoor or on the field use, its brightness levels adjust automatically with lighting conditions. It can be powered using standard Alkaline C-size batteries or externally using standard USB chargers or Power Packs.

The Pro Radar Module features proprietary ball-tracking technology to provide the user with professional level accuracy of +/- 1 MPH. The rugged, water-resistant casing is built from the same high-impact plastic as football helmets. Flexible configuration features allow for customized set-up options to best fit your speed measurement needs.

The Smart Coach radar is a one of a kind speed radar that can display speeds stand-alone, connected to the Smart Display, or connected to the Pocket Radar App. With professional level accuracy of +/- 1 MPH, it features the same proprietary ball-tracking technology as the Pro Radar Module, but in a pocket-sized form factor.

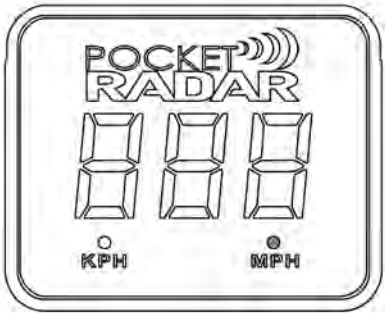
If you want to be a power user and try other features and settings, reading through this manual will help you to take full advantage of the other features and capabilities of Pocket Radar's Smart product line.

Any questions: check the Pocket Radar™ website under frequently asked questions (FAQ's) or contact us at Info@PocketRadar.com.

WHAT'S INCLUDED (DISPLAY)

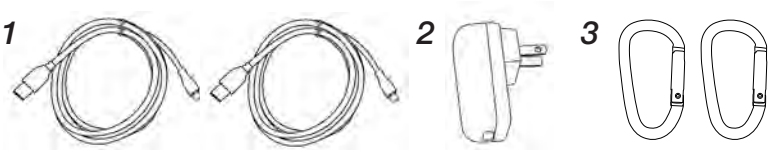
The parts included with your Smart Display package are listed below.
See page 7 for Radar selection.

If you are missing any components, please contact Pocket Radar, Inc. at 1-888-381-2672 or email Info@PocketRadar.com



Smart Display

SD2000

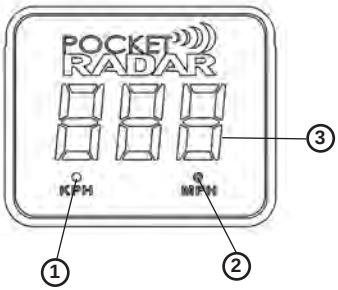


1. **Two 6 ft (2 meter) USB cables Type A to Micro B**
2. **One 2 amp AC power supply (USB charger)**
3. **Two carabiners**

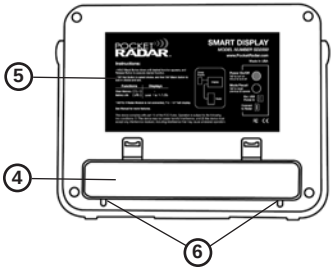
PRODUCT TOUR

Smart Display

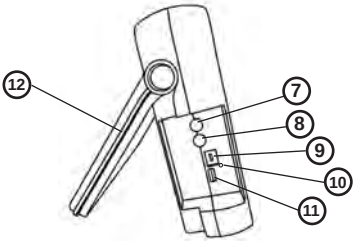
Front



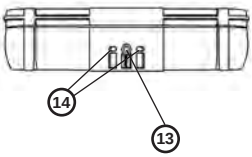
Back



Side



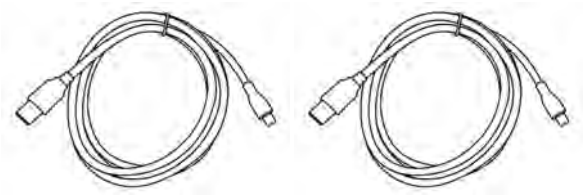
Bottom



1. KPH units indicator or brightness sensor
2. MPH units indicator or brightness sensor
3. 3 Digit 7 segment speed display
4. Battery door
5. Instruction label
6. Cable slots for USB Power Packs
7. Power / Selection button (red)
8. Recall / Mode button (black)
9. USB power input
10. Indicator light for USB power
11. USB out to radar
12. Adjustable handle
13. Tripod mounting nut
14. Slots for tripod alignment pins

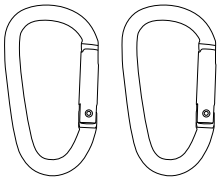
ACCESSORIES

Included



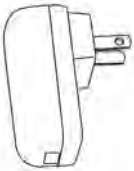
Two 6 ft (2 meter) USB cables Type A to Micro B

The cables are used to connect your radar device to the Smart Display, as well as provide USB power.



Two carabiners

The carabiners are used to hang the Smart Display onto a fence or camera tripod. See Mounting Options on page 6.



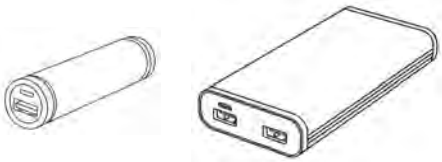
One 2 amp AC power supply (USB charger)

The AC power supply is used to provide power via USB.

ACCESSORIES

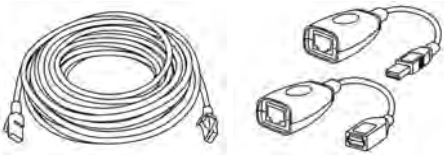
Not Included

USB Power Packs



USB Power Packs are available in several sizes and power ratings. Small ones should provide over 5 hours of use from a fresh charge.

50 foot USB Extender Cable Kit



USB cables are only useful up to 6 feet (2 meters) in length. If you plan to set up the Smart Display more than 6 feet apart from your radar, this Extender Kit is available through the Pocket Radar online store.

Camera Tripod

A Deluxe Tripod may be purchased through the Pocket Radar online store.

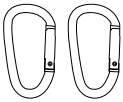
Alkaline C-Size Batteries

4 Alkaline C-size batteries provide up to 14 hours of use with the Smart Display.

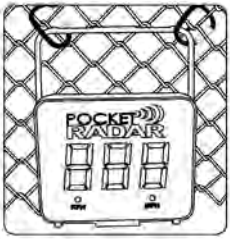
MOUNTING OPTIONS

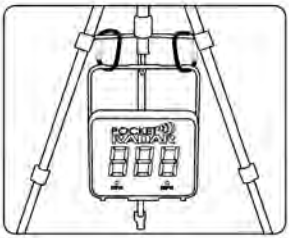
The Smart Display has many different mounting/location options. The Smart Display can be mounted to a metal fence using carabiners (included), to a camera tripod using the tripod mount located on the bottom, to the legs of a tripod with the carabiners, sitting on a chair or table, hung on a wall using the handle or even standing on the ground using the handle as a kickstand. Please refer to the illustrations below.

Two carabiners



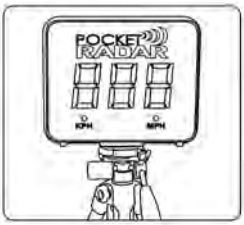
Carabiners can be used to mount the Smart Display to a fence or the bottom of a camera tripod.





Camera Tripod

See similar mounting steps on pages 14 and 35.



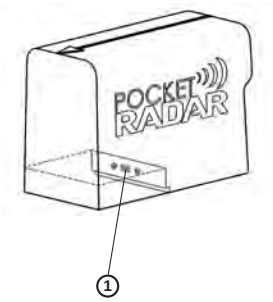
Smart Display Kickstand

Located on back of Smart Display.

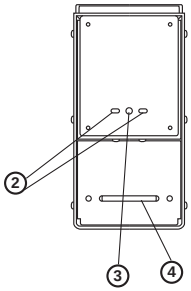
SELECT YOUR RADAR

Pro Radar Module (pages 8-28)

Front

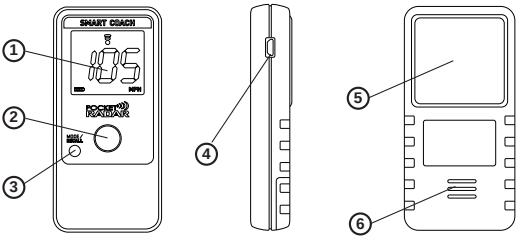


Bottom



1. Micro B USB connector
2. Slots for tripod alignment pins
3. Tripod mounting nut
4. Strain relief for USB cable (pass USB cable under this strap)

Smart Coach radar (pages 29-46)



1. Speed display.
2. Trigger button to capture speeds.
3. Mode/Recall button to enter Constant-On mode or Recall previous 25 speeds.
4. Micro-USB Connector on the side of unit.
5. Radar lens aimed at the ball in flight.
6. Battery compartment.

GETTING STARTED

Pro Radar Module

Set Up Instructions

1. Insert the small end of one of the 6 ft (2 meter) Type A to Micro B cables into the Smart Display and the other end into the 2 amp AC power supply (USB charger). Then plug the 2 amp AC power supply into any power outlet.
2. Insert the small end of the other 6 ft (2 meter) Type A to Micro B cable into the Pro Radar Module and the other end into the Smart Display (pass USB cable under the plastic Strain Relief strap).
3. Press the Power (red) button on the Smart Display, and you're ready to start capturing speeds.

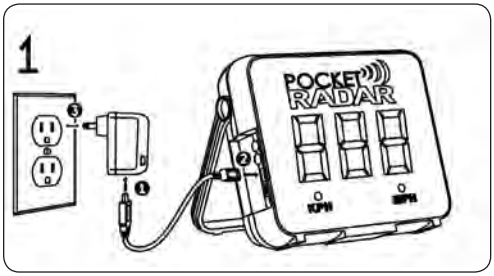
- **See next page for illustrations.**

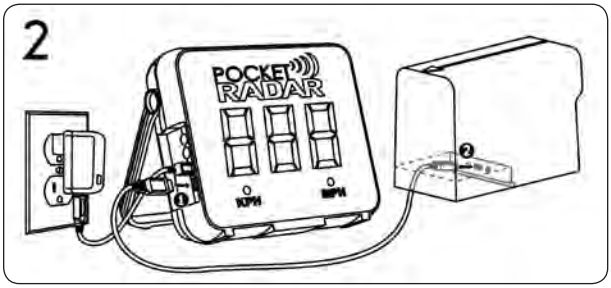
IMPORTANT NOTE: If the Pro Radar Module is not connected to the Smart Display, "no rdr" will flash for 2 minutes until it powers off automatically. To turn off the Smart Display, simply hold the Power (red) button down for 1 second. Once "OFF" is displayed, release the button and the Smart Display is now turned off. Please note that the speed memory stored in the Smart Display will be erased as well.

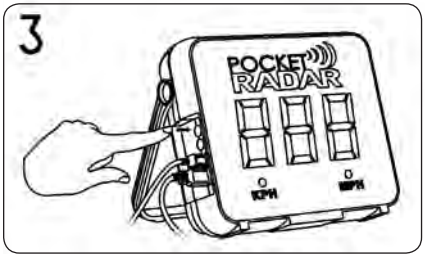
If you plan on using standard Alkaline C-size batteries or a USB Power Pack as your power source, please refer to page 15 in this Manual.

GETTING STARTED

Set Up Illustrations







PAIRING

To Pair the Smart Display to your Radar Module for wireless operation, follow the steps below:

1. Use the supplied USB cable to temporarily connect the Smart Display directly to your Radar Module by wired connection.

2. Hold down both the red and black buttons at the same time on the Smart Display for 2 seconds to enter the advanced menu.

3. Release both buttons when 'bLE' is displayed. The display will continuously flash 'bLE' while the pairing operation is in process.

4. Once the "BLE' turns solid and stops flashing, the Smart Display is then paired with the Radar Module and can be used wirelessly.

AIMING

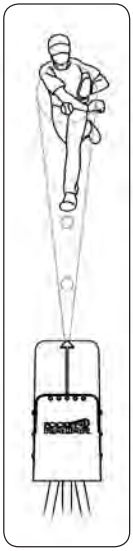
Must Aim Radar at Release Point

The Pro Radar Module captures a speed reading by sending out a focused beam of very low power radio waves and looking for them to bounce off a moving object, such as a ball. These radio waves are focused in a small cone shaped like a flashlight beam which comes out the front end, where the arrow is pointing, on the Pro Radar Module.

When positioning the Pro Radar Module, make sure it is set up and aimed directly in line with the release point of the ball. This can either be from behind or in front of the path of where the ball is coming from (see pg. 49 to learn more about angles and how tilting down or up may affect a speed reading). Make sure the beam of the Pro Radar Module is not blocked or obstructed. **Please refer to the illustrations on the next page for examples of where the Pro Radar Module should be positioned.**

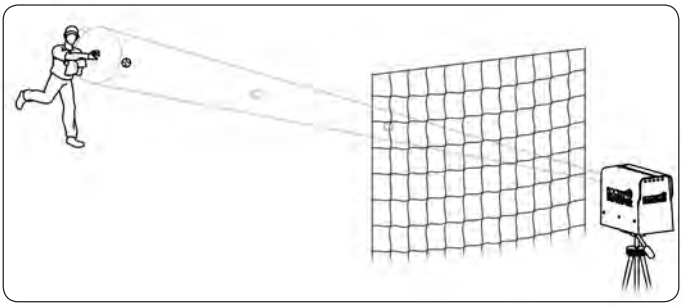
AIMING

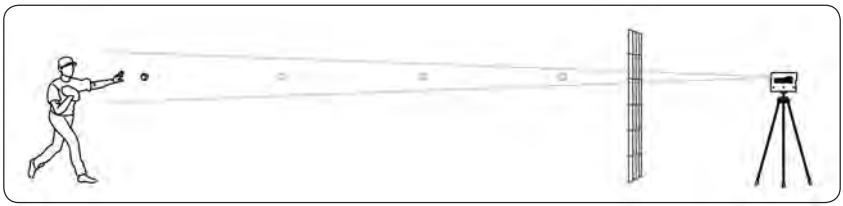
Aiming Illustrations



Recommended Distance:

- Set up the Pro Radar Module either in front or behind the path of the moving object.
- If throwing or hitting into a net, set up the Pro Radar Module at least 15 feet behind the net or the player.

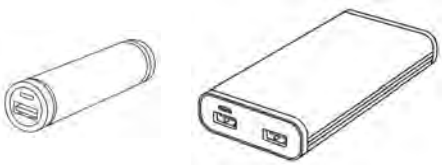




OPTIONAL ACCESSORIES

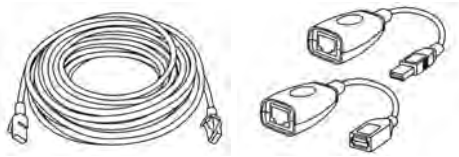
Using Smart Display with Pro Radar Module

USB Power Packs



USB Power Packs are available in several sizes and power ratings. Small ones should provide over 5 hours of use from a fresh charge.

50 foot USB Extender Cable Kit



USB cables are only useful up to 6 feet (2 meters) in length. If you plan to set up the Pro Radar Module more than 6 feet apart from the Smart Display, this Extender Kit is available through the Pocket Radar online store.

Camera Tripod

A Deluxe Tripod may be purchased through the Pocket Radar online store.

Alkaline C-Size Batteries

4 Alkaline C-size batteries provide up to 14 hours of use with the Smart Display.

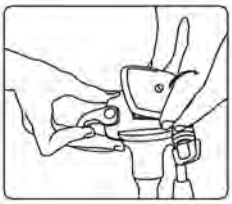
MOUNTING OPTIONS

Mounting to a Tripod

1.

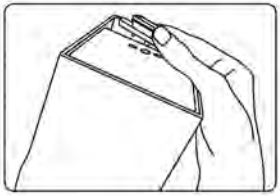
2.

3.



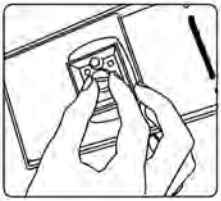
Detach the tripod shoe that screws into the bottom of the Pro Radar Module.

4.



Insert the tripod shoe into the Pro Radar Module screw area with the alignment pin in the slot.

5.



Using fingers or a coin, screw the tripod shoe into the Pro Radar Module.

6.

Attach the tripod shoe and Pro Radar Module back onto the tripod.

Questions? Visit **www.PocketRadar.com/PRS** *for helpful video tutorials or call us toll-free at 888-381-2672*

POWER OPTIONS

The Smart Display and Pro Radar Module combo can be powered either using USB connection or Alkaline C-size batteries. This makes it extremely portable and flexible for indoor and outdoor use.

Power On - Self Test

If powered via USB or batteries, the Smart Display will flash “888” for 2 seconds, after pressing the Power (red) button. That means the Self Test has passed and you are ready to start capturing speeds. If the Self Test fails, then an error code will be displayed. The error code will include “E #”, where the # specifies the error number (example: E 4). This error code will flash every second for 2 minutes until it powers off automatically. **See Page 51 for more about Error Codes.**

Standard Batteries

If powered via Alkaline C-size batteries, after the Self Test passes, the Smart Display will flash “bAt” for 1 second and then the current battery level (either Lo, 1, 2, 3 or 4) for another second. Typical battery life with Alkaline C-size batteries is 14 hours. See table below:

Level	Remaining Life
4	100% to 76%
3	75% to 51%
2	50% to 26%
1	25% to 5%
Lo / bAt	Less than 20 minutes

USB Powered

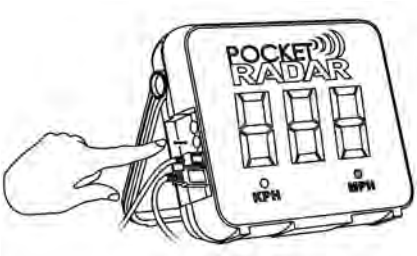
When using a USB Power Pack, the battery life will be dictated by the specs of the Power Pack. **See Page 13 for more about USB Power Pack options.**

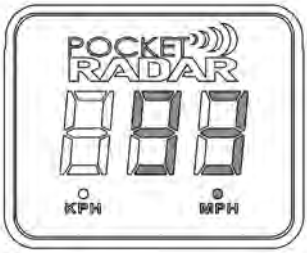
STANDARD MENU

Recall Memory

The Smart Display stores the previous 25 speeds in the memory. Each time a speed is collected, the most recent speed is stored, and the oldest of the 25 speeds is discarded.

To access the Recall memory, “TAP” the Mode (black) button on the Smart Display. The most recent speed will display. Cycle through the previous 25 speeds by repeatedly TAPPING the button, as shown below.





If there are no speeds stored in the memory or you reach the end of the list, then it will display “-”. To exit the Recall Memory menu, simply press the Power (red) button or else it will automatically exit after 45 seconds of inactivity.

NOTE: The Memory Recall list will be cleared automatically as soon as the Smart Display is turned off or any advanced settings are modified.

STANDARD MENU

Clear Memory

Sometimes it's better to start fresh when beginning a new session. To eliminate the previous speeds that are stored in the Smart Display, all you need to do is "Press and Hold" the Mode (black) button down for 2 seconds until the word "CLr" displays. Once you see "CLr", release the button and a "-" will appear. That means the memory has been deleted and you are now ready to capture new speeds.

1.

2.

3.

STANDARD MENU

USB / Battery Power Level

The Smart Display offers unique flexibility with either USB or battery powered options. To view battery life or USB, simply “Press and Hold” the Mode (black) button down for 3.5 seconds. Once you see the word “bAt”, release the button. You will either see the word “USb” showing that you are using USB power, or you will see the “Lo, 1, 2, 3, or 4” showing how much battery life is left on your Alkaline C-size batteries. **See table on page 15 for more details.**

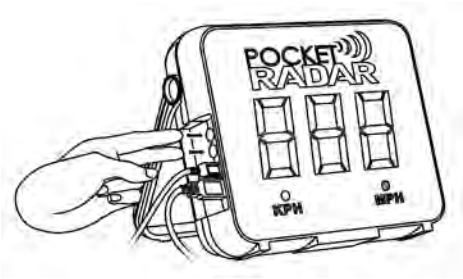
1.

2.

3.

NOTE: If the Smart Display flashes “Lo / bAt” immediately change the batteries. There are less than 20 minutes of operation remaining.

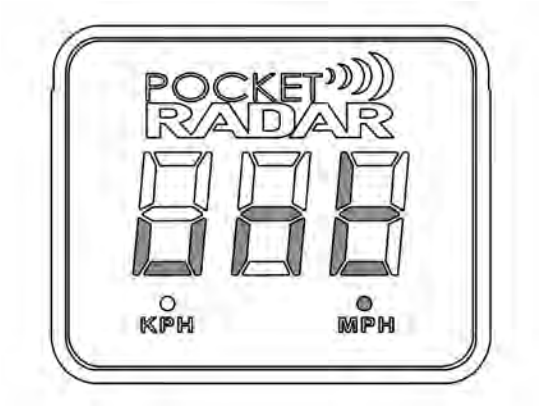
ADVANCED MENU



Holding down the Power (red) and Mode (black) buttons at the same time for more than 2 seconds will bring the user into the advanced menu listed below. Release both buttons when desired menu is shown.

1. **Measurement Units** (unt): *see page 20*
   - Allows the user to change units of measurement between either MPH or KPH.
2. **Sensitivity / Range** (SEn): *see pages 21 and 26*
   - Allows the user to control the sensitivity and measurement modes of the Pro Radar Module.
3. **Auto - Off / Power - Off Timer** (toF): *see page 22*
   - Allows the user to specify how long the Display should remain on before it automatically turns off.
4. **Auto - On** (Aon): *see page 23*
   - Allows the user to have the system automatically turn on when external power is supplied. Useful in permanent installations.
5. **Brightness** (br): *see page 24*
   - Allows the user to manually adjust the visibility of the Display from Auto (default) to Low (dim) or High (very bright).
6. **Version** (VEr): *see page 25*
   - Allows the user to identify which version of firmware their Smart Display or radar contains.

ADVANCED MENU



Measurement Units

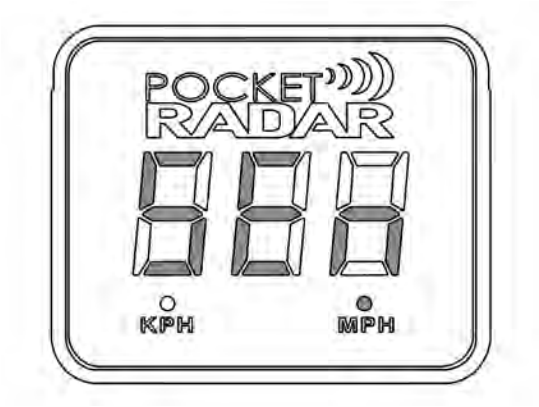
The first menu feature is the option to alternate between miles per hour (MPH) and kilometers per hour (KPH). Hold down the Power (red) and Mode (black) buttons for 2 seconds and "unt" will appear.

• Releasing the Power (red) and Mode (black) buttons while "unt" is displayed will bring the user into the selection menu.

- Current unit (MPH or KPH) LED will flash every 0.5 seconds.
- Pressing the Power (red) button will cycle the user through MPH or KPH indicators.
- Pressing the Mode (black) button locks in your choice and resumes normal operation; Current selection on the display is saved as the new units.
- Not cycling for 45 seconds will not update the current units, and automatically exits the menu.

• **The factory default setting is miles per hour (MPH)** *(See page 27 to Learn More)*

ADVANCED MENU



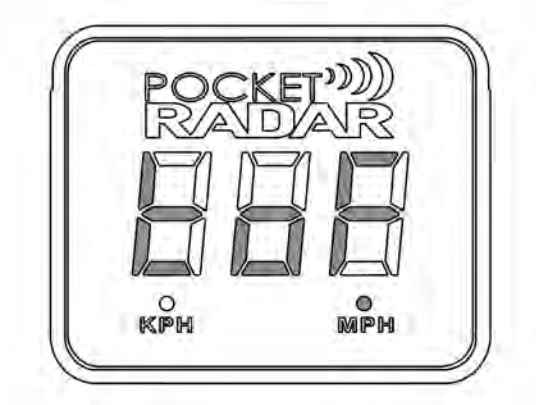
Sensitivity / Range

The second menu feature is the option to control the sensitivity and measurement modes of the Pro Radar Module. Hold down the Power (red) and Mode (black) buttons for 3.5 seconds and “SEn” will appear.

- Releasing the Power (red) and Mode (black) buttons while “SEn” is displayed will bring the user into the selection menu.
  - "SEn” and the selected value will alternate every 1 second.
  - Pressing the Power (red) button will cycle the user through levels 1-10. **(See page 26 for details)**
  - Pressing the Mode (black) button locks in your choice and resumes normal operation; Current selection on the display is saved as the new setting.
  - Not cycling for 45 seconds will not update the curent value, and automatically exits the menu.

- **The factory default setting is** 10 *(See page 27 for Important Details)*

ADVANCED MENU



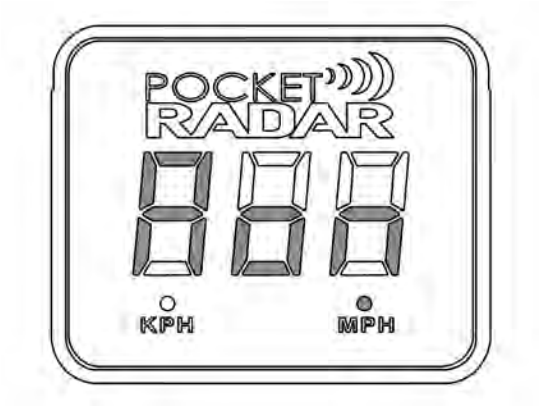
Auto - Off / Power - Off Timer

The third menu feature is the option to specify how long the Display should remain on before it automatically turns off after no readings. Hold down the Power (red) and Mode (black) buttons for 5 seconds and "toF" will appear.

- Releasing the Power (red) and Mode (black) buttons while "toF" is displayed will bring the user into the selection menu.
  - "toF" and the selected time will alternate every 1 second.
  - Pressing the Power (red) button will cycle the user through the different timer options (no, 5, 15, 30, 60). "no" means indefinitely, while 5 - 60 are in minutes.
  - Pressing the Mode (black) button locks in your choice and resumes normal operation; Current selection on the display is saved as the new timer value.
  - Not cycling for 45 seconds will not update the current value, and automatically exits the menu.

- **The factory default setting is 15 minutes** *(See page 27 to Learn More)*

ADVANCED MENU



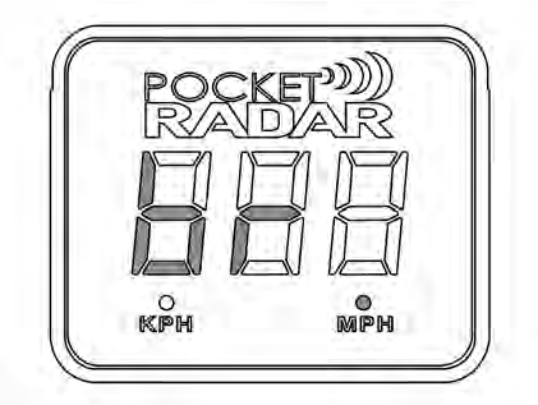
Auto - On

The fourth menu feature is the option to automatically turn on the Display when plugged in using a USB power source. Hold down the Power (red) and Mode (black) buttons for 6.5 seconds and "Aon" will appear.

- Releasing the Power (red) and Mode (black) buttons while "Aon" is displayed will bring the user into the selection menu.
  - "Aon" and the selected mode will alternate every 1 second.
  - Pressing the Power (red) button will cycle the user through the different auto options (YES or no). "YES" means auto - on is set up, while "no" means auto - on is not set up.
  - Pressing the Mode (black) button locks in your choice and resumes normal operation; Current selection on the display is saved as the new auto-on mode.
  - Not cycling for 45 seconds will not update the current value, and automatically exits the menu."

- **The factory default setting is** "no" *(See page 27 to Learn More)*

ADVANCED MENU



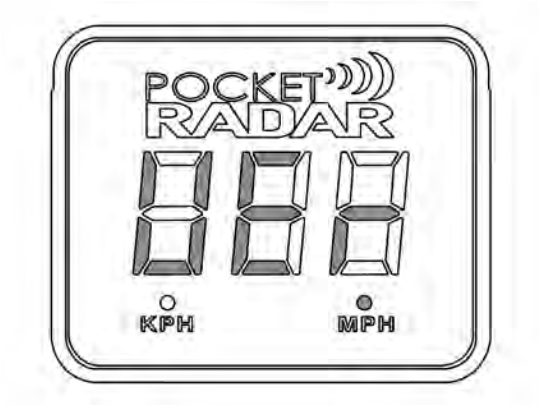
Brightness

The fifth menu feature is the option to adjust the visibility of the Display in 3 different levels: Auto, Low and High. Hold down the Power (red) and Mode (black) buttons for 8 seconds and "br" will appear.

- Releasing the Power (red) and Mode (black) buttons while "br" is displayed will bring the user into the selection menu.
  - "br" and the selected mode will alternate every 1 second.
  - Pressing the Power (red) button will cycle the user through three different brightness levels (Aut, Lo and Hi): "Aut" means automatic, while "Lo" is dim and "Hi" is very bright.
  - Pressing the Mode (black) button locks in your choice and resumes normal operation; Current selection on the display is saved as the new brightness mode.
  - Not cycling for 45 seconds will not update the current choice, and automatically exits the menu.

- **The factory default setting is** "Aut" *(See page 27 to Learn More)*

ADVANCED MENU



Version

The sixth and final menu feature is the identification of the firmware the Smart Display contains. Hold down the Power (red) and Mode (black) buttons for 9.5 seconds and "UEr" will appear.

- Releasing the Power (red) and Mode (black) buttons while "UEr" is displayed will bring the user into the selection menu.
  - "dSP" or "rdr" and the version number will alternate every 1 second.
  - Pressing the Power (red) button will cycle the user through "dSP" and version number of the Display, or "rdr" and version number of the Pro Radar Module.
  - Pressing the Mode (black) button or leaving untouched for 45 seconds will exit the menu.

- **This information is only necessary if you are contacting Pocket Radar for support.**

SENSITIVITY SETTINGS

Note: Sensitivity Settings are not available with the Smart Coach radar

The Smart Display and Pro Radar Module have adjustable sensitivity and different operating modes to allow users to optimize the operation for different types of measurement setups. If you are experiencing interference that causes false readings or “ghost readings”, try to adjust the sensitivity level down to the lowest setting within each operating mode described below, that will still pick up the ball. This can help minimize the effects of any interference in the environment.

There are 10 sensitivity settings available in the advanced features menu. Here is a description of the different operating modes for each sensitivity setting:

- **Setting 10** – This is the default setting. It is a general purpose mode and is the most sensitive.
- **Settings 9 to 6** – These settings are best for measuring a ball that travels at least 30 feet or more. In this mode, setting 9 is the most sensitive and setting 6 is the least sensitive.
- **Settings 5 to 4** – These settings are a special mode to be used with dimpled practice balls or for measuring Ball Exit Speed / Exit Velocity off the bat on a ball that travels at least 30 feet or more. In this mode, setting 5 is the most sensitive and setting 4 is the least sensitive.
- **Settings 3 to 1** – These settings are best for measuring close up when hitting into a net where the ball is in flight and travels 10 to 30 feet. In this mode, setting 3 is the most sensitive and setting 1 is the least sensitive. Use setting 1 for very close work on large objects like a volleyball or soccer ball.

If you need any further help on how to decide on the best settings for your measurement set up, please contact us toll-free at 888-381-2672 or by e-mail at Support@PocketRadar.com

FACTORY DEFAULT SETTINGS

Measurement Units: MPH (miles per hour)

- The Smart Display out of the box will be set to miles per hour instead of kilometers per hour because it is the unit preference of most of our users.

Sensitivity / Range: 10

- The Pro Radar Module has a factory default setting for the most general purpose operating mode and the maximum possible range.

NOT AVAILABLE FOR USE WITH SMART COACH RADAR.

Auto - Off / Power - Off Timer: 15 Minutes

- The Pro Radar System will automatically turn off after 15 minutes of no activity while on batteries. This is a good balance which ensures the system will not shut off prematurely, but still maximizes the battery life available from a set of Alkaline C-size batteries.

Auto - On: No

- Most users will find that they do not want the Pro Radar System to automatically power on when plugged in to a USB power source. The Auto-On setting is not for all users. It is good for permanent installations that want to have it power on when the AC power is turned on.

Brightness: Auto

- The Pro Radar System Auto mode will switch the display between Lo and Hi automatically depending on ambient lighting conditions. Outdoors on a sunny day, the display will automatically brighten when showing speeds to enable further distance viewing.

SPECIFICATIONS

Nominal Operating Frequency: K-Band 24.125 GHz

Measures from: 25 to 130 MPH (40 to 209 KPH)

Accuracy: +/- 1 MPH (+/- 2 KPH)

Range under good measurement conditions:
Baseball up to 200 feet and Larger Objects up to 300 feet.

Size: **Smart Display**
Height (8.75 inches), Width (11 inches), Depth (2.75 inches)

Pro Radar Module
Height (5.75 inches), Width (4 inches), Depth (8 inches)

Weight: **Smart Display**
2 lbs. 6 oz. (without 4 Alkaline C-size batteries)
3 lbs. 0 oz. (with 4 Alkaline C-size batteries)

Pro Radar Module
2 lbs. 2 oz.

Typical Battery Life:
14 hours with 4 Alkaline C-size batteries (not included)

Operating Temperature Range: -22° F to 140° F (-30° C to 60° C)

Storage Temperature: -40° F to 185° F (-40° C to 85° C)

Memory Recall function: 25 readings deep

Skip to Page 47 if you do not have a Smart Coach radar

GETTING STARTED

Smart Coach radar

Set Up Instructions

1. Insert the small end of one of the 6 ft (2 meter) Type A to Micro B cables into the Smart Display and the other end into the 2 amp AC power supply (USB charger). Then plug the 2 amp AC power supply into any power outlet.
2. Insert the small end of the other 6 ft (2 meter) Type A to Micro B cable into the Smart Coach radar and the other end into the Smart Display.
3. Press the Power (red) button on the Smart Display and activate the Smart Coach radar, and you're ready to start capturing speeds.

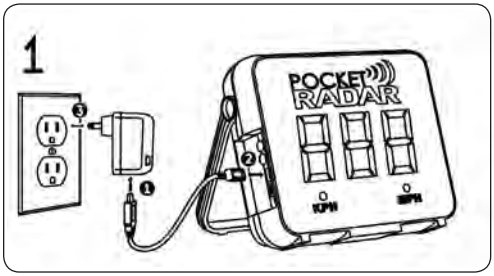
- **See next page for illustrations.**

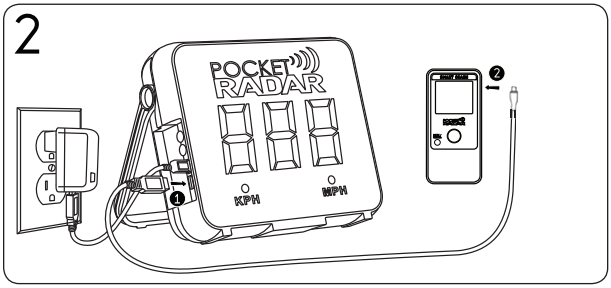
IMPORTANT NOTE: If the Smart Coach radar is not connected to the Smart Display, "no rdr" will flash for 2 minutes until it powers off automatically. To turn off the Smart Display, simply hold the Power (red) button down for 1 second. Once "OFF" is displayed, release the button and the Smart Display is now turned off. Please note that the speed memory stored in the Smart Display will be erased as well.

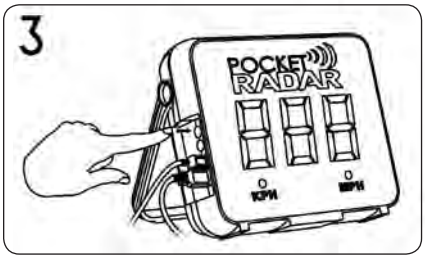
If you plan on using standard Alkaline AAA batteries or a USB Power Pack as your power source, please refer to page 36 in this Manual.

GETTING STARTED

Set Up Illustrations







PAIRING

To Pair the Smart Display to your Smart Coach for wireless operation, follow the steps below:

1. Use the supplied USB cable to temporarily connect the Smart Display directly to your Smart Coach radar by wired connection.

2. Hold down both the red and black buttons at the same time on the Smart Display for 2 seconds to enter the advanced menu.

3. Release both buttons when 'bLE' is displayed. The display will continuously flash 'bLE' while the pairing operation is in process.

4. Once the "BLE' turns solid and stops flashing, the Smart Display is then paired with the Smart Coach radar and can be used wirelessly.

AIMING

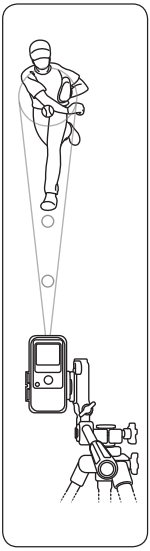
Must Aim Radar at Release Point

The Smart Coach radar captures a speed reading by sending out a focused beam of very low power radio waves and looking for them to bounce off a moving object, such as a ball. These radio waves are focused in a small cone shaped like a flashlight beam which comes out the back end of the Smart Coach radar.

When positioning the Smart Coach radar, make sure it is set up and aimed directly in line with the release point of the ball. This can either be from behind or in front of the path of where the ball is coming from (see pg. 49 to learn more about angles and how tilting down or up may affect a speed reading). Make sure the beam of the Smart Coach radar is not blocked or obstructed. **Please refer to the illustrations on the next page for examples of where the Smart Coach radar should be positioned.**

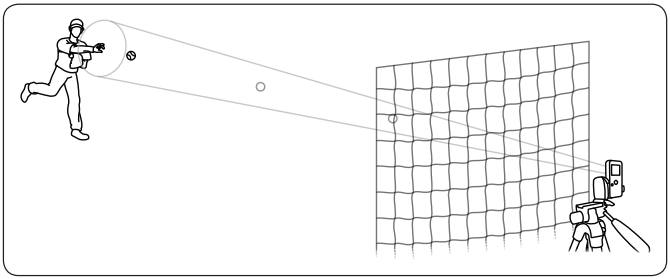
AIMING

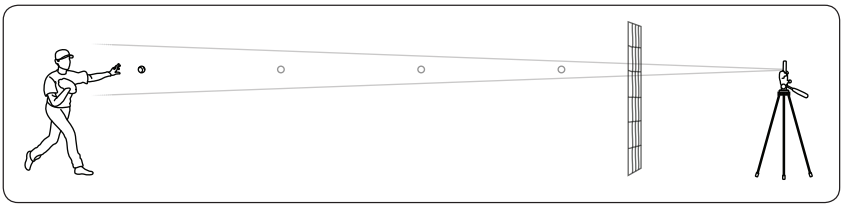
Aiming Illustrations



Recommended Distance:

- Set up the Smart Coach radar either in front or behind the path of the moving object.
- If throwing or hitting into a net, set up the Smart Coach radar at least 15 feet behind the net or the player.

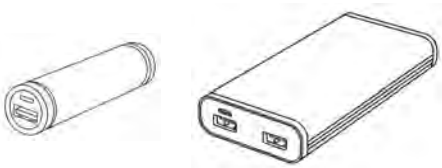




OPTIONAL ACCESSORIES

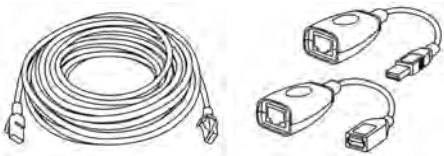
Using Smart Display with Smart Coach radar

USB Power Packs



USB Power Packs are available in several sizes and power ratings. Small ones should provide over 5 hours of use from a fresh charge.

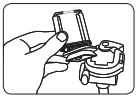
50 foot USB Extender Cable Kit



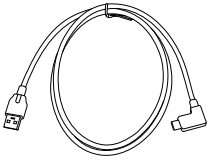
USB cables are only useful up to 6 feet (2 meters) in length. If you plan to set up the Smart Coach radar more than 6 feet apart from the Smart Display, this Extender Kit is available through the Pocket Radar online store.

Camera Tripod

A Deluxe Tripod may be purchased through the Pocket Radar online store.



You will also need a Tripod Mount to attach the Smart Coach radar to the tripod (see pg. 35)



Right-Angled USB Cable

A 6 ft. Right-Angled USB Cable may be purchased through the Pocket Radar online store.

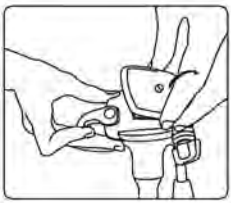
MOUNTING OPTIONS

Mounting to a Tripod

1.

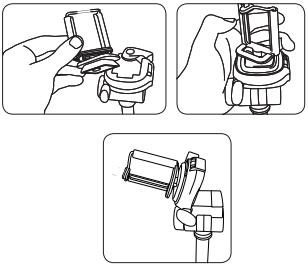
2.

3.



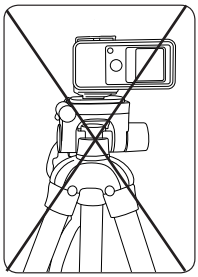
Detach the tripod shoe that screws into the bottom of the Tripod Mount.

4.



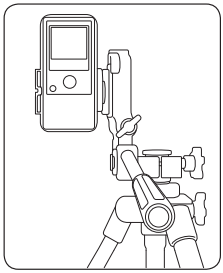
Screw tripod mount into the tripod shoe (using a coin helps). Clip tripod mount/tripod shoe back into the tripod. Flip tripod head to lateral position.

5.



Incorrect set up

6.



Correct Set Up

POWER OPTIONS

The Smart Display and Smart Coach radar combo can be powered either using USB connection or Alkaline C-size batteries. This makes it extremely portable and flexible for indoor and outdoor use. When connected to the Smart Display, the Smart Coach radar will be powered via the Display and not the internal AAA batteries.

Power On - Self Test

If powered via USB or batteries, the Smart Display will flash "888" for 2 seconds, after pressing the Power (red) button. That means the Self Test has passed and you are ready to start capturing speeds. If the Self Test fails, then an error code will be displayed. The error code will include "E #", where the # specifies the error number (example: E 4). This error code will flash every second for 2 minutes until it powers off automatically. **See Page 51 for more about Error Codes.**

Standard Batteries

If powered via Alkaline C-size batteries, after the Self Test passes, the Smart Display will flash "bAt" for 1 second and then the current battery level (either Lo, 1, 2, 3 or 4) for another second. Typical battery life with Alkaline C-size batteries is 14 hours. See table below:

Level	Remaining Life
4	100% to 76%
3	75% to 51%
2	50% to 26%
1	25% to 5%
Lo / bAt	Less than 20 minutes

USB Powered

When using a USB Power Pack, the battery life will be dictated by the specs of the Power Pack. **See Page 34 for more about USB Power Pack options.**

STANDARD MENU

USB / Battery Power Level

The Smart Display offers unique flexibility with either USB or battery powered options. To view battery life or USB, simply “Press and Hold” the Mode (black) button down for 2 seconds. Once you see the word “bAt”, release the button. You will either see the word “USb” showing that you are using USB power, or you will see the “Lo, 1, 2, 3, or 4” showing how much battery life is left on your Alkaline C-size batteries. **See table on page 36 for more details.**

1.

2.

3.

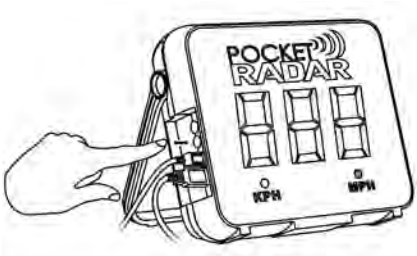
NOTE: If the Smart Display flashes “Lo / bAt” immediately change the batteries. There are less than 20 minutes of operation remaining.

STANDARD MENU

Recall Memory

The Smart Display stores the previous 25 speeds in the memory. Each time a speed is collected, the most recent speed is stored, and the oldest of the 25 speeds is discarded.

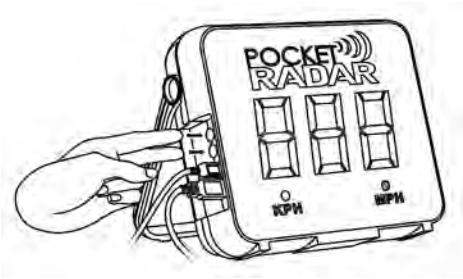
To access the Recall memory, “TAP” the Mode (black) button on the Smart Display. The most recent speed will display. Cycle through the previous 25 speeds by repeatedly TAPPING the button, as shown below.



If there are no speeds stored in the memory or you reach the end of the list, then it will display “-”. To exit the Recall Memory menu, simply press the Power (red) button or else it will automatically exit after 45 seconds of inactivity.

NOTE: The Memory Recall list will be cleared automatically as soon as the Smart Display is turned off or any advanced settings are modified.

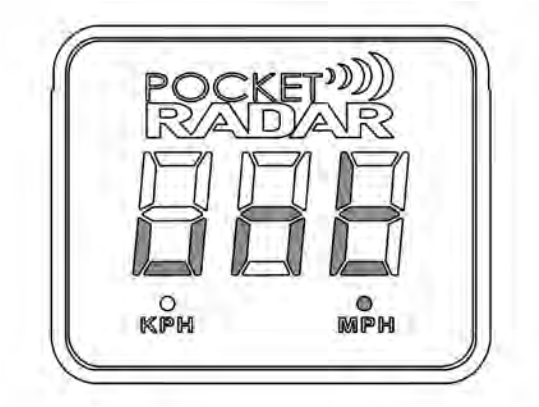
ADVANCED MENU



Holding down the Power (red) and Mode (black) buttons at the same time for more than 2 seconds will bring the user into the advanced menu listed below. Release both buttons when desired menu is shown.

1. **Measurement Units** (unt): *see page 40*
   - Allows the user to change units of measurement between either MPH or KPH.
2. **Auto - Off / Power - Off Timer** (toF): *see page 41*
   - Allows the user to specify how long the Display should remain on before it automatically turns off.
3. **Auto - On** (Aon): *see page 42*
   - Allows the user to have the system automatically turn on when external power is supplied. Useful in permanent installations.
4. **Brightness** (br): *see page 43*
   - Allows the user to manually adjust the visibility of the Display from Auto (default) to Low (dim) or High (very bright).
5. **Version** (VEr): *see page 44*
   - Allows the user to identify which version of firmware their Smart Display or radar contains.

ADVANCED MENU



Measurement Units

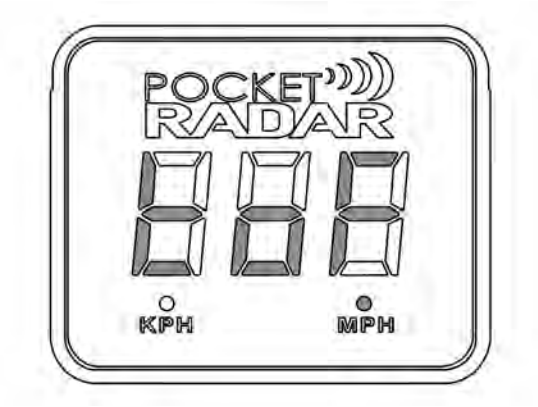
The first menu feature is the option to alternate between miles per hour (MPH) and kilometers per hour (KPH). Hold down the Power (red) and Mode (black) buttons for 2 seconds and "unt" will appear.

• Releasing the Power (red) and Mode (black) buttons while "unt" is displayed will bring the user into the selection menu.

- Current unit (MPH or KPH) LED will flash every 0.5 seconds.
- Pressing the Power (red) button will cycle the user through MPH or KPH indicators.
- Pressing the Mode (black) button locks in your choice and resumes normal operation; Current selection on the display is saved as the new units.
- Not cycling for 45 seconds will not update the current units, and automatically exits the menu.

• **The factory default setting is miles per hour (MPH)** *(See page 45 to Learn More)*

ADVANCED MENU



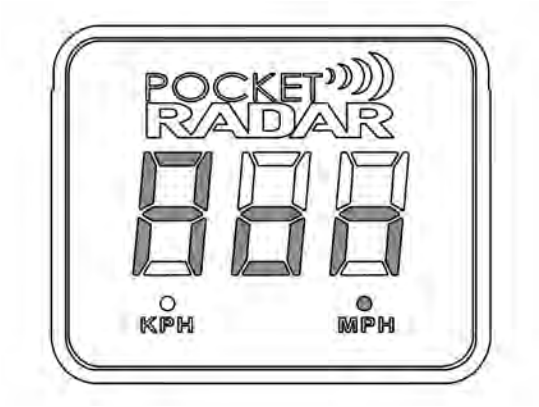
Auto - Off / Power - Off Timer

The second menu feature sets how long the Display and Smart Coach radar stays in Constant-On mode. Hold down the Power (red) and Mode (black) buttons for 3.5 seconds and "toF" will appear.

- Releasing the Power (red) and Mode (black) buttons while "toF" is displayed will bring the user into the selection menu.
  - "toF" and the selected time will alternate every 1 second.
  - Pressing the Power (red) button will cycle the user through the different timer options (no, 5, 15, 30, 60). "no" means indefinitely, while 5 - 60 are in minutes.
  - Pressing the Mode (black) button locks in your choice and resumes normal operation; Current selection on the display is saved as the new timer value.
  - Not cycling for 45 seconds will not update the current value, and automatically exits the menu.

- **The factory default setting is 15 minutes** *(See page 45 to Learn More)*

ADVANCED MENU



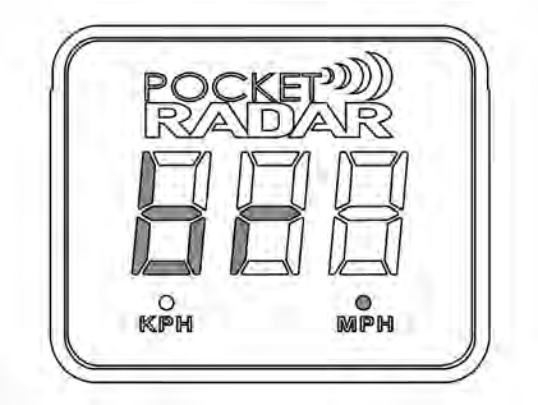
Auto - On

The third menu feature is the option to automatically turn on the Display and radar when plugged in using a USB power source. Hold down the Power (red) and Mode (black) buttons for 5 seconds and "Aon" will appear.

- Releasing the Power (red) and Mode (black) buttons while "Aon" is displayed will bring the user into the selection menu.
  - "Aon" and the selected mode will alternate every 1 second.
  - Pressing the Power (red) button will cycle the user through the different auto options (YES or no). "YES" means auto - on is set up, while "no" means auto - on is not set up.
  - Pressing the Mode (black) button locks in your choice and resumes normal operation; Current selection on the display is saved as the new auto-on mode.
  - Not cycling for 45 seconds will not update the current value, and automatically exits the menu."

- **The factory default setting is** "no" *(See page 45 to Learn More)*

ADVANCED MENU



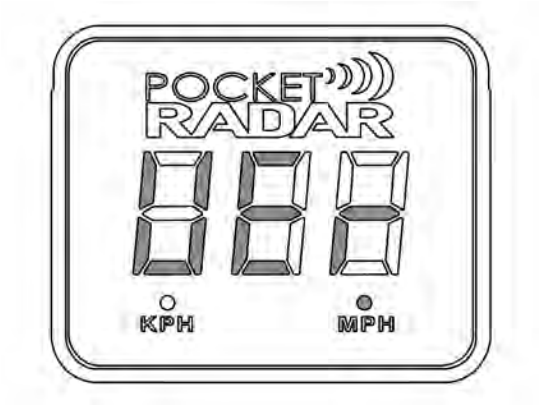
Brightness

The fourth menu feature is the option to adjust the visibility of the Display in 3 different levels: Auto, Low and High. Hold down the Power (red) and Mode (black) buttons for 6.5 seconds and "br" will appear.

- Releasing the Power (red) and Mode (black) buttons while "br" is displayed will bring the user into the selection menu.
  - "br" and the selected mode will alternate every 1 second.
  - Pressing the Power (red) button will cycle the user through three different brightness levels (Aut, Lo and Hi): "Aut" means automatic, while "Lo" is dim and "Hi" is very bright.
  - Pressing the Mode (black) button locks in your choice and resumes normal operation; Current selection on the display is saved as the new brightness mode.
  - Not cycling for 45 seconds will not update the current choice, and automatically exits the menu.

- **The factory default setting is** "Aut" *(See page 45 to Learn More)*

ADVANCED MENU



Version

The fifth and final menu feature is the identification of the firmware the Smart Display contains. Hold down the Power (red) and Mode (black) buttons for 8 seconds and "UEr" will appear.

- Releasing the Power (red) and Mode (black) buttons while "UEr" is displayed will bring the user into the selection menu.
  - "dSP" or "rdr" and the version number will alternate every 1 second.
  - Pressing the Power (red) button will cycle the user through "dSP" and version number of the Display, or "rdr" and version number of the Smart Coach radar.
  - Pressing the Mode (black) button or leaving untouched for 45 seconds will exit the menu.

- **This information is only necessary if you are contacting Pocket Radar for support.**

FACTORY DEFAULT SETTINGS

Measurement Units: MPH (miles per hour)

• The Smart Display and Smart Coah radar out of their boxes will be set to miles per hour instead of kilometers per hour because it is the unit preference of most of our users.

Auto - Off / Power - Off Timer: 15 Minutes

• The Smart Display and Smart Coach radar combo will automatically drop out of Constant-On mode after 15 minutes of no speeds while using batteries. If the Smart Coach radar is connected to the App, the App can turn it back on remotely for up to 30 minutes. After which the Smart Display will shut down completely.

Auto - On: No

• Most users will find that they do not want the Smart Display and Smart Coach radar combo to automatically power on when plugged in to a USB power source. The Auto-On setting is not for all users. It is good for permanent installations that want to have it power on when the AC power is turned on.

Brightness: Auto

• Auto mode will switch the display between Lo and Hi automatically depending on ambient lighting conditions. Outdoors on a sunny day, the display will automatically brighten when showing speeds to enable further distance viewing.

SPECIFICATIONS

Nominal Operating Frequency: K-Band 24.125 GHz

Measures from: 25 to 130 MPH (40 to 209 KPH)

Accuracy: +/- 1 MPH (+/- 2 KPH)

Range under good measurement conditions:
Baseball up to 120 feet and Larger Objects up to 200 feet.

Size: **Smart Display**
Height (8.75 inches), Width (11 inches), Depth (2.75 inches)

Smart Coach Radar
Height (4.7 inches), Width (2.3 inches), Depth (0.8 inches)

Weight: **Smart Display**
2 lbs. 6 oz. (without 4 Alkaline C-size batteries)
3 lbs. 0 oz. (with 4 Alkaline C-size batteries)

Smart Coach Radar
4.5 oz. with 2 AAA Alkaline batteries (included)

Typical Battery Life:
14 hours in Constant-On Mode or 4,000 manual button presses using 4 Alkaline C-size batteries (not included)

Operating Temperature Range: -22° F to 140° F (-30° C to 60° C)

Storage Temperature: -40° F to 185° F (-40° C to 85° C)

Memory Recall function: 25 readings deep

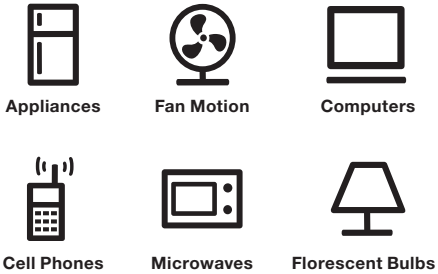
TROUBLESHOOTING

Interference

Certain types of interference can cause all radar equipment to sometimes display false or so called “ghost readings,” or make it harder to capture the speed of the intended object.

Movement: Any objects that rotate, move or vibrate can create a reading. Large amounts of vibration, such as very loud noises, can result in false readings. Things like motors, fans, nearby traffic or the movement of tree leaves can be detected by Radar device. In some cases, if you are measuring speeds on a field near a roadway, you may pick up the speed of a car in the distance.

Electrical: Cell phones, cell towers, wireless devices, radio and TV transmitters, computers, fluorescent lights, televisions, walkie-talkies, etc., can also possibly create a false reading.



One technique to test for interference is to make a measurement in the same direction with no obvious object in motion and see if you get a speed to display.

TROUBLESHOOTING

Ghost Readings

Radar devices are very sensitive instruments for measuring moving objects of any kind. There may be times when the speed reading displayed may not make sense, or when there is no apparent moving object present. False readings of this kind are sometimes referred to as “ghost readings”. These can result from either a movement of some kind, such as a fan or hidden moving object, or an electrical source of interference, such as a fluorescent light, neon sign, computer monitor, cell phone or cell phone tower nearby.

You will need to use your own judgment to decide if the speed measurement makes sense. If the speed doesn’t make sense, you may have a false reading. An example would be if the Display flashes 107 mph, when you know the ball speed shouldn’t be any higher than 65 mph. The radar devices have software designed to ignore most of these false ghost readings, but in certain cases there may be things in your environment that may cause interference.

Tips to Eliminate Interference

If you are capturing random speed readings, there may be a solution to your problem. Here are a few tips that may help:

- Change the Sensitivity / Range level of the Pro Radar Module to a different setting. See page 20 for details.
- Use the lowest setting in the operating mode in your set up that will reliably get the object speed that you want.
- If the Radar device is positioned behind the release point, try changing the location to be in front.

TROUBLESHOOTING

Angles

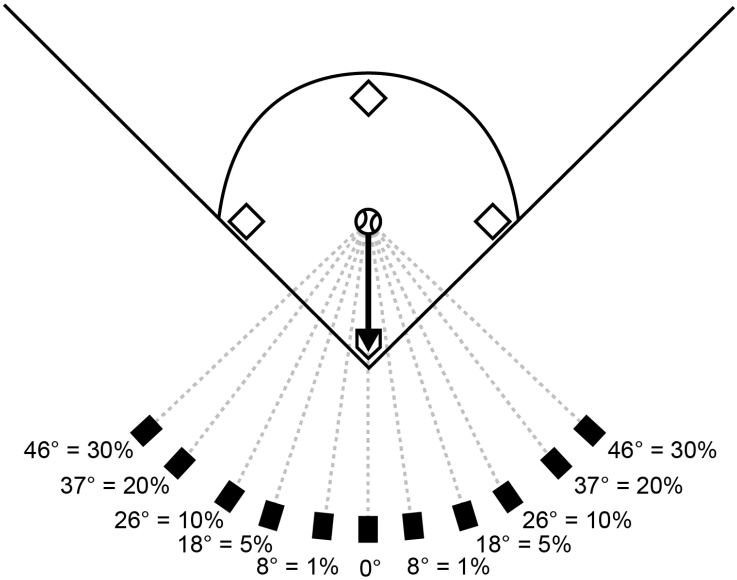
A common mistake made with ALL radar equipment is trying to measure the speed of an object at an angle. Due to the nature of how Doppler speed radar works, the radar device will measure most accurate speeds when the object is moving directly towards or away from the radar beam. If you set up the radar's beam even a slight angle sideways to the path of the moving object, you will measure a SLOWER speed than the object actually travels along its path. At slight angles the error is very small; however at larger angles the error can become substantial. Please refer to the table below for speeds related to off-angle issues.

ANGLE DEGREES (+/-)	0˚	10˚	20˚	25˚	30˚	45˚
TRUE SPEED (MPH)	MEASURED SPEED (MPH)					
25	25	25	23	23	22	18
35	35	34	33	32	30	25
45	45	44	42	41	39	32
50	50	49	47	45	43	35
60	60	59	56	54	52	42
70	70	69	66	63	61	49
90	90	89	85	82	78	64
100	100	98	94	91	87	71

TROUBLESHOOTING

Cosine Error

This off angle speed measurement error is referred to as the COSINE error, named after the mathematical function that allows you to calculate the exact speed versus angle. The measured speed will always read lower than the actual speed as you move off the centerline of the path of the moving object. For small angles, this error will be very small. This is why you see police officers pointing their radar along the direction of the road; not down a side street pointing sideways to the road.



Each degree from center will cause your speed to read the noted % lower.

ERROR CODES

ERROR:	CODE:	EXPLANATION:	FIX:
No Radar	no / rdr	Radar is not connected	Connect radar device
Low Battery	Lo / bAt	There is 20 minutes left of power on the batteries	Replace batteries
Unsupported Device	E 1	Unsupported radar device connected to the Smart Display	Connect supported radar device to Smart Display. Contact support for help
External Power Failure	E 2	External Power Supply has failed, possibly overloaded	Disconnect / reconnect radar device. If not re-solved, contact support
Internal Power Failure	E 3	Internal Power Supply has failed, possibly a mechanical issue	Disconnect / reconnect all power. If not resolved, contact support
Communication Failure	E 4	An issue has occurred in communication with the radar device	Disconnect / reconnect all power. If not resolved, contact support
Radar Version Failure	E 9	Unsupported radar device connected to the Smart Display	Connect supported Radar Module to Smart Display. Contact support for help
Internal Overflow	E 16	An issue has occurred in communication with the radar device	Disconnect / reconnect all power. If not resolved, contact support
Flash Memory Failure	E 19	Configuration value not correctly saved	Disconnect / reconnect all power. If not resolved, contact support

Need help? Please contact Pocket Radar, Inc. You can reach us toll-free at 888-381-2672 or by e-mail at Support@PocketRadar.com

FCC CLASS B STATEMENT

FCC Class B Product Label Statement

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.

FCC Class B User Manual Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE: Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

Not intended for Law Enforcement Use.

WARRANTY INFORMATION

Limited Warranty

– Pocket Radar, Inc. warrants to the original purchaser that this product will be free of defects in workmanship and materials for a period of two years from the date of purchase.

– If the product is found by Pocket Radar, Inc. to be defective, Pocket Radar, Inc's entire liability and your exclusive remedy for breach of warranty shall be that Pocket Radar, Inc. will repair or replace the product and return the product or its replacement to you at no charge. Provided that you ship the product to Pocket Radar, Inc. in an authorized RMA shipping package with a description of the defect and subject to the other conditions of this warranty. Should the product prove to not be repairable, Pocket Radar, Inc. may substitute an equivalent product of the same or similar style and of a value not lesser than the original purchase price of your instrument.

– Pocket Radar, Inc. warrants the repaired or replacement product to be free from defects in material and workmanship on the same terms as the product originally purchased. This warranty will be void if the product, serial number or other identification marks have been defaced, damaged or removed. This warranty does not cover wear and tear due to normal use, or damage to the product as the result of improper usage, neglect of care, alteration, accident or unauthorized repair, nor does this warranty apply to the batteries necessary to operate the product.

– This warranty is extended to the original retail purchaser only and may not be transferred or assigned to subsequent owners. In order to validate your warranty, you must provide proof of purchase acceptable to Pocket Radar, Inc. together with the product for warranty repair/replacement.

– Products returned to Pocket Radar, Inc. must be pre-authorized by Pocket Radar, Inc. and must be returned in an authorized RMA (Return Material Authorization) packaging. Please contact Pocket Radar, Inc. to obtain information on authorized packaging and to obtain return instructions or for any other question regarding this warranty.

WARRANTY INFORMATION

Limited Warranty cont.

– THE FOREGOING WARRANTY IS GIVEN IN LIEU OF AND POCKET RADAR, INC. DISCLAIMS ALL OTHER WARRANTIES OR REPRESENTATIONS, EXPRESSED OR IMPLIED, IN FACT OR IN LAW, WITH RESPECT TO THIS PRODUCT, INCLUDING, BUT NOT LIMITED TO, (1) THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE, OR (2) THAT USE OF THE PRODUCT WILL BE UNINTERRUPTED AND ERROR FREE.

– Pocket Radar, Inc. shall have no liability for any indirect or speculative damages (including, but not limited to, consequential, incidental and special damages) relating to the use of or inability to use this product, whether arising out of contract, negligence, tort, or under any warranty theory, or for infringement of any other party's intellectual property rights, irrespective of whether Pocket Radar, Inc. had advance notice of the possibility of any such damages, including, but not limited to, loss of use, revenue or profit. In no event shall Pocket Radar, Inc's total liability for all claims regarding the product exceed the price paid for the product. Pocket Radar, Inc. neither assumes nor authorizes anyone to assume for it any other liabilities.

– Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

RETURN INFO

For US Customers:
If your Pocket Radar product is not working properly please
DO NOT RETURN TO THE RETAILER OR STORE.
We are here to help. Please contact Pocket Radar, Inc. and we will take care of you. You can reach us toll-free at 888-381-2672 or by e-mail at Support@PocketRadar.com

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