



**RadioPopper P1 Radio Wireless
Owners Manual**

RadioPopper is owned and manufactured by Leap Devices, LLC in Phoenix Arizona. This product was designed, produced, and manufactured in the USA.

PRODUCT PATENT PENDING

FCC STATEMENT

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.

This equipment has been verified to comply with the limits for a class B computing device, pursuant to FCC Rules. Operation with non-approved equipment is likely to result in interference to radio and TV reception.

The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

FCC ID: V4TRPP1TX770US

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.

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RadioPopper P1 Radio Wireless System

Introduction

Thank you for your purchase of the RadioPopper P1 wireless radio system. This product represents much development and lots of thinking outside the box.

This system was developed by a “regular guy” with an electronics background - a wedding photographer from Arizona seeking to bridge the weak link of existing wireless systems - the need to maintain a “line of sight” between master and slave flash units. We hope this new tool brings a great new dynamic to your work and how you use your lighting.

In short, the RadioPopper P1 system allows you to use the automatic and high-speed sync functions built into your existing flash units without concern of whether or not the master and slave units can “see” each other. You now have the ability to place your lights wherever you choose, then controlling the output power of each slave flash from the camera body manually or automatically via your camera’s E TTL or iTTL logic system. It’s also the world’s first product to effectively provide you high speed sync by radio. That’s a major step forward. Enjoy.

Each aspect of this system has been well thought out to accomplish the nearly impossible task of reproducing an extremely fast communication with exacting timing while at the same time remaining simple and intuitive for the user to install and operate.

Please read this short manual entirely before installing or operating your RadioPopper P1 wireless system. Proper installation is key to correct operation.

If you have any troubles along the way, feel free to call or email.

Introduction

How It Works

Your current master and slave wireless flash system continues to function just as it always has. That's the beauty and simplicity of the RadioPopper P1 system.

The RadioPopper P1 Transmitter "listens" to the light signal being created inside the master flash unit or remote commander on your camera's hot shoe. The P1 Transmitter sends this signal over the radio where it is read by the RadioPopper P1 Receiver. The receiver then uses it's own internal light source to "reproduce" this light signal. The light is sent down the flexible fiber optic cable where it lights a small nylon bead at the end. When this bead is placed over the infrared sensor on a slave flash - that slave flash responds to the "reproduced" light signal just as it normally would had it seen the light directly from the master flash.

Installation couldn't be more simple. Just place the RadioPopper P1 Transmitter on top of your master flash or IR commander device using the included Velcro pads. "Look Ma! No wires!"

On the receiving end, add a P1 Receiver in a similar way, anchor the optic bead over the infrared sensor on your slave flash and you're all done. No wires or adaptors and no complicated system to re-learn.

Now just power up and shoot. You've got remote control of your slave flashes, full E TTL and iTTL support along with high speed sync all the way to 1/8000 - by radio.

NOTE: When first using the system you may develop "smile ache" in your cheeks, and you may feel the uncontrollable urge to giggle like a school girl. This is perfectly normal.

RadioPopper P1 Radio Wireless System

Compatible Hardware:

The P1 System has been tested and found to be compatible with the following flash hardware.

Canon Master / Commander Devices:

SpeedLite 550EX⁽¹⁾, SpeedLite 580EX, SpeedLite 580EX II, SpeedLite Transmitter ST-E2

Canon Slave / Remote Devices:

SpeedLites 420EX, 430EX, 550EX, 580EX, 580 EX II

Nikon Master / Commander Devices:

SB-800 AF Speedlight, SU-800 Wireless Speedlight Commander, Nikon “pop-up” flash used as a Commander⁽²⁾

Nikon Slave / Remote Devices:

SB-800 AF Speedlight, SB-600 AF Speedlight

Note(1): 550EX when used as a Master device must be set to E TTL channel 4 for greatest reliability, and E TTL channel 3 as an alternate. 550EX will not properly activate the radio system when set to E TTL channels 1 or 2. 550EX when used as a Slave device will operate on any E TTL channel.

Note(2): The P1 system was never designed to work with the so called “pop-up” flash on some Nikon cameras, but it does indeed function and activate. Mounting is somewhat “improvised” at the user’s discretion. See the Release Notes at www.radiopopper.com or as provided as addendum to this user manual for more information.

Specifications:

Both P1 Transmitter and P1 Receiver have similar specifications. Some specifications are given once for this reason.

Dimensions : 2.75” x 2.0” x 0.8” (70mm x 50mm x 20mm)

Weight: 2.5 ounces / 70 grams (Including battery and antenna during normal operation)

Battery: “AA” Size Standard Battery / Alkaline, NiCad, or NiMH / 0.9 volt to 1.6 volt

Battery Life: 5 to 10 Hours continual active transmit time for Std Alkaline battery. Longer with NiCad and NiMH.

Radio Frequency: 916 Mhz ISM Band

Radio Range: Real world 100 ft to 500 ft depending on conditions and environment⁽³⁾

Note(3): Please refer to the Release Notes at www.radiopopper.com or as provided as addendum to this user manual for more information including real world test results as to reliability rates at various ranges and in various environments.

Specifications and Warnings

WARNING!!! WARNING!!! WARNING!!!!

PLEASE read this section in detail for important warnings and notices.

USE ONLY THE SUPPLIED TRANSMITTER ANTENNA!

Using any antenna other than the one supplied for use with your P1 Transmitter is a violation of Federal Law and may actually cause damage to the radio inside the transmitter. This will also promptly void your warranty. Your P1 Transmitter has been carefully tuned to broadcast the maximum signal strength allowable by law. Altering the antenna characteristics is more likely to “de-tune” or degrade performance than to improve it.

INSERT THE BATTERY IN THE CORRECT DIRECTION!

Inserting the battery “backwards” could possibly damage the electronic components inside P1 Transmitter and P1 Receiver units. The little “bump” on the AA always points away from the spring. A graphic is provided at the base of the AA battery holder, as well as on the back side of the circuit board for reference. Further, you should observe for the Power LED blinking a few times about three seconds after you insert the battery - indicating proper insertion.

DO NOT REMOVE OR TAMPER WITH THE CIRCUIT BOARD!

The delicate components on the circuit board are face-down for a reason. Some of the components inside your P1 Transmitters and P1 Receivers are especially susceptible to electrostatic shock (they're easily ‘zapped’ by static electricity) - just touching them could damage them. Your circuit board is grounded to the case - as long as it's not removed everything is safe. Breaking the glue seal and removing or tampering with your circuit board will promptly void your warranty.

YOUR POPPERS CAN'T SWIM!! KEEP THEM DRY!!

Of particular concern is the opening around the Power Button and Link Button. If you dunk them, it may be too late. If you're caught outside in the rain, take care to keep these openings dry, as well as the access on the P1 Transmitter for the magnetic sensor in front. Should you expose a RadioPopper to anything wet, remove the battery as quickly as possible and allow it 24 hours someplace dry to evaporate any water. You may find it has come back to life. Again, allowing anything wet inside the case of your P1 Transmitter or P1 Receiver will promptly void the warranty.

READ THE RELEASE NOTES!

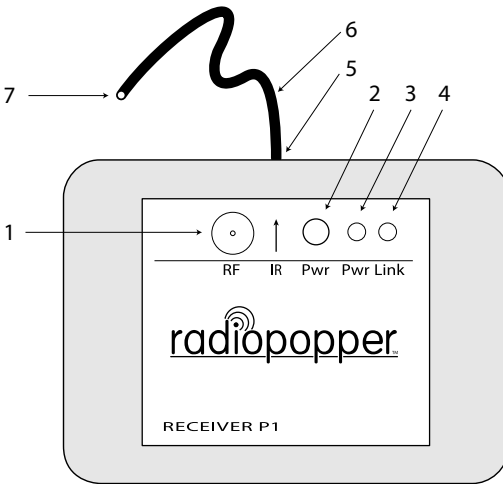
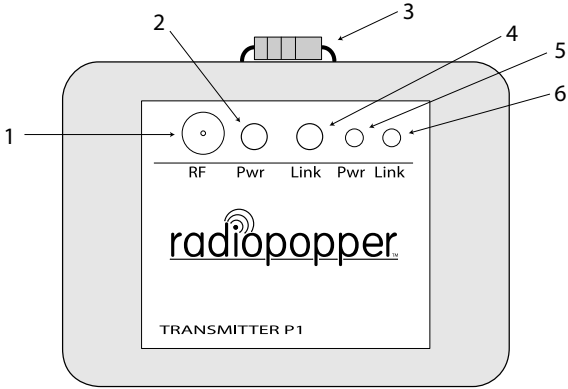
When you buy new computer software, it's sent out with release notes. You usually ignore them. Please don't ignore the RadioPopper release notes. A printed notice may have been provided as an addendum to this user manual. We also provide an updated version of the release notes on our website at www.radiopopper.com in the support section. They're kind of dry and not very interesting, but reading them may help you get even more enjoyment out of your RadioPopper P1 system.

CONTACT US IF YOU GET CONFUSED!

You're a valued customer and we really do care about you. (And not in that automated “your call is very important to us but we're going to leave you on hold for an hour anyway” customer service recording sort of way). Seriously - if you've got questions, we're going to do everything possible to take care of you as quickly and as personally as possible. The phone number is on our website and you can email us at ‘support@radiopopper.com’

RadioPopper P1 Radio Wireless System

P1 Transmitter



P1 Receiver

Parts Description

Transmitter Parts

- 1) Antenna Mount
- 2) Power Button
- 3) Magnetic / Inductive / Magic Signal Pickup Sensor
- 4) Link Button
- 5) Power LED (Green)
- 6) Link LED (Orange)

Receiver Parts

- 1) Antenna Mount
- 2) Power Button
- 3) Power LED (Green)
- 4) Link LED (Orange)
- 5) Holding Sleeve Opening for Optic
- 6) Fiber Optic Light Conduit
- 7) White Nylon Bead

Also Included in Kit or as Accessories (Not Pictured)

- 1) Your first set of AA Batteries
- 2) Industrial strength genuine Velcro fasteners
- 3) Alcohol swab(s) for prep and clean of attachment points
- 4) Vinyl Optic Covers
- 5) Finger sized phillips screw driver
- 6) This instruction manual
- 7) Antenna for Transmitter (the straight one)
- 8) Antenna for Receiver (the one with the 90 degree bend)
- 9) Extended range Dipole Antenna for Receiver (available accessory)

RadioPopper P1 Radio Wireless System

Installation: RadioPopper P1 Transmitter

- 1)** Remove the two phillips screws in the under side of the P1 Transmitter unit. Use the supplied finger sized phillips screw driver.
 - 2)** Remove the cover and insert one (1) AA size battery into the battery holder. It is very important to follow the polarity direction indicated on the circuit board to insure unit operation and avoid possible transmitter damage.
 - 3)** Approximately three seconds after inserting the AA battery the Power light will blink briefly indicating proper battery placement and that the unit is functioning correctly.
 - 4)** Replace the rear cover and screws, taking care not to over-tighten or strip the screw sockets.
 - 5)** Select the approximate mounting location on top of your master flash or IR commander (supplied by your camera manufacturer). Insure this area is clean. Use the included alcohol swab to clean this area, as well as the under side of the P1 Transmitter unit.
 - 6)** Attach the Velcro pieces together. Remove both backing sheets and affix the joined Velcro strips first to the under side center of the P1 Transmitter unit.
 - 7)** Hold the P1 Transmitter with Velcro attached over the approximate mounting location on the intended Master flash unit. Compare location to the pictures in **Fig 2.1**. Press down firmly and hold pressure for thirty seconds to tightly bond the Velcro strip adhesive to both the Master flash unit and the under side of the P1 Transmitter.
 - 8)** Do not pull the Velcro apart for several hours. The adhesive on the Velcro will set to full strength in 20 to 30 hours. Care should be taken during this time to avoid upsetting the bond being formed between the Velcro and plastic to insure maximum long term adhesion.
 - 9)** Install the supplied antenna by screwing it onto the antenna connector on the face of the P1 Transmitter.
- WARNING:** Do not power up the P1 Transmitter without the antenna installed - doing so could damage the output stage of the radio transmitter.
- WARNING:** Use only the supplied antenna on the P1 Transmitter. Using any other antenna is a violation of Federal Law, and may actually cause damage to the output stage of the radio transmitter.
- 10)** When mounting the P1 Transmitter in the future by pressing the Velcro pads together - a greater bond may be achieved between the Velcro hook and latch sides by pressing firmly, then applying a slight rotational force between the Master flash unit and the P1 Transmitter. This tends to “set” the Velcro pads together.
 - 11) IMPORTANT!** Be sure to adjust the Sync Interval if required. An incorrect Sync Interval setting will cause lots of mis-fires. See “Detailed Operating Instructions” Pg. 17, and the section “Adjusting the Sync Interval” Pg. 20 for detailed information and an explanation of the Sync Interval.

Installation

Installation: RadioPopper P1 Receiver

NOTE: When first bending the supplied fiber optic tube, you will likely hear and feel a bit of a “cracking” inside the optic. This is perfectly normal and is the result of the 48 fibers inside the optic moving against each other and breaking free of the inside of the outer coating. The fibers are not actually cracking - they are quite durable and will not break or crack when bending.

- 1) Remove rear cover and insert battery just as you did with the Transmitter. Replace the rear cover.
- 2) Insert the supplied optic tube into the opening on the side of the P1 Receiver. Care should be taken to do this gently. The optic outer diameter and the inner diameter of the sleeve inside the P1 Receiver are the same size - this makes for a very firm fit. It may be somewhat tricky to align the optic, but after repeated use the outer coating of the optic tube will wear down slightly allowing for a more natural fit. This fit was intentional to insure the optic remains secure even after repeated use.

Insert the optic into the sleeve by rotating it between your fingers as if tightening a screw. It will set into the sleeve 1/8 inch to 1/4 inch (a few millimeters). Insert the optic just far enough to secure it in place.

- 3) Select a mounting location along the side of the body of your slave flash. The optic may be routed directly, around the back side, or downward wrapped under the body just forward of the hot-shoe. See the graphics in **Fig 2-2**, **Fig 2-3**, and **Fig 2-4** and place the white bead at the end of the optic tube as indicated for your model of slave flash.

NOTE: You may trim the optic if needed with a pair of scissors or a razor blade. Cutting the optic may cause a slight bevel or burr to form along the plastic optic coating - making insertion into the sleeve a challenge. You may need to carefully trim away any incidental burr before you are able to cleanly insert the optic in the sleeve.

- 4) Insure this area is clean. Use the included alcohol swab to clean this area, as well as the under side of the P1 Receiver unit.
- 5) Attach the Velcro pieces together. Remove both backing sheets and affix the joined Velcro strips first to the under side center of the P1 Receiver unit.
- 6) Hold the P1 Receiver with Velcro attached over the approximate mounting location on the intended Slave flash unit. Compare location to the pictures in Fig 2.1. Press down firmly and hold pressure for thirty seconds to tightly bond the Velcro strip adhesive to both the Slave flash unit and the under side of the P1 Receiver.
- 7) Allow the adhesive on the Velcro pads to set for 20 to 30 hours before placing significant strain on them, just as you did with the Transmitter mounting.
11. Install the supplied antenna (the one with the 90 degree bend) by screwing it onto the antenna connector on the face of the P1 Receiver.

Continued next page ...

RadioPopper P1 Radio Wireless System

12. Place the white nylon bead at the end of the optic tube over the infrared sensor on your slave flash as indicated by the graphics in **Fig 2-2** through **Fig 2-5** for your Slave flash model.

It is okay to bend the optic tube, but try to avoid a bend radius any tighter than the radius of a standard #2 pencil. Even if a “kink” is formed in the outer tubing, the inner fibers are not easily damaged. The fibers are made of super flexible plastic, not glass. The tube tends to hold its shape a bit.

NOTE: The large red transparent piece on the front of your flash is NOT the infrared sensor. In fact this area has nothing to do with the wireless communication system - it is simply a focus assist light. The correct sensor is a shiny dark black window on the outside of your slave flash unit.

13. Attach one of the supplied adhesive vinyl strips supplied for your flash unit over the optic and the sensor on your slave flash unit. It is recommended to completely cover the optic and sensor to allow freedom of working outdoors in direct sunlight as there's no longer a concern of the sun “blinding” the sensor. This also results in the most secure mounting of the optic.

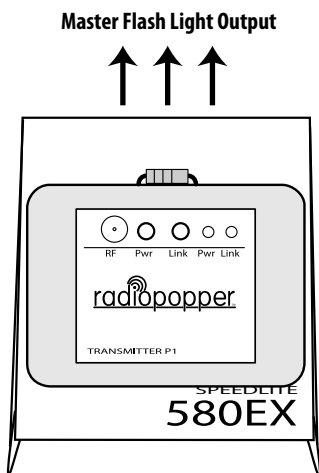
An alternative version includes a small circular opening in the vinyl. Use this version if other photographers or assistants will be attempting to trigger the slave flash unit with the traditional visible light systems. This alternate attachment still secures the optic in place while allowing visibility of the sensor to other master flashes.

NOTE: It is okay if the slave flash “sees” the visible signal from the master flash on your camera and the signal from the RadioPopper system at the same time.

NOTE: The supplied adhesive vinyl strips make for a clean install, but you could always use any kind of tape for this purpose should you run out of vinyl strips. Replacement strips may also be ordered at a very reasonable price from the RadioPopper online store.

14. When mounting the P1 Receiver in the future by pressing the Velcro pads together - a much greater bond may be achieved between the Velcro hook and latch sides by pressing firmly, then applying a slight rotational force between the Slave flash unit and the P1 Receiver. This tends to “set” the Velcro pads together.

15. Take another deep breath. We're almost there. I know the excitement is killing you. We've all been there. Please take a few minutes and read the rest of the manual no matter how eager you may be to go play.



Transmitter Mounting on Master Flash Top View (looking down from top)

Transmitter should be just about centered on top of the master flash. The pickup sensor should point forward toward the end of the flash that emits light. The rear edge of the Transmitter should just begin to cover the text printed on the top of your flash.

Mount in a similar location for all models of Master flash (Canon 550EX, 580EX, 580EX II, and Nikon hardware SB-800 and the like).

Fig 2-1

Transmitter Mounting on Other Hardware

For mounting the P1 Transmitter on other hardware such as the Canon ST-E2 and Nikon SU-800 IR Commanders, the mounting is essentially the same. Mount the P1 Transmitter to the very top of the Master device, about centered with the magnetic pickup sensor facing forward and the antenna pointed upward.

For additional images of product mounting, please see the Support section of our website.

Canon ST-E2: We suggest mounting Velcro to the front side of the battery cover.

Nikon SU-800: Mount directly on the top edge, which is a bit rounded but with proper placement and pressure on the Velcro pads, a good anchor should be achievable.

Nikon "Pop-Up Flash": Your P1 Transmitter was never intended to be used with a Nikon "pop-up" flash (used as a master CLS commander on some camera bodies) but it does work. Though placement is somewhat 'improvised', note that you should only mount your P1 transmitter behind the flash with the magnetic pickup sensor nearest the back side of the flash. You should not mount it in front of the flash where the flash is firing directly at the unit.

Fig 2-2
Canon SpeedLite 580EX II
Slave Flash Optic Placement

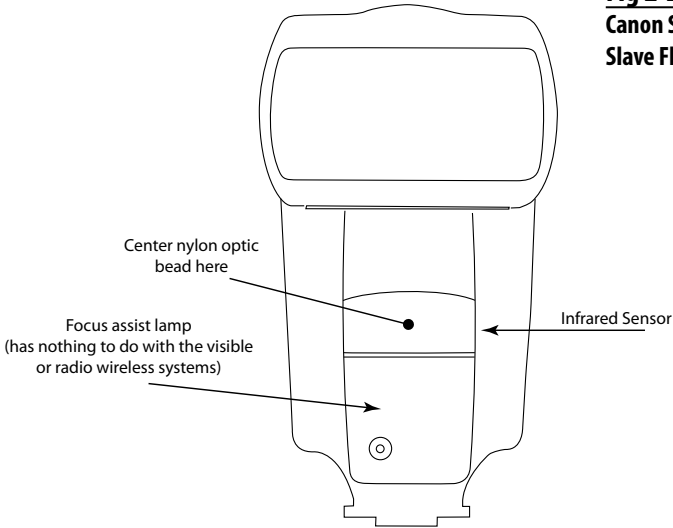
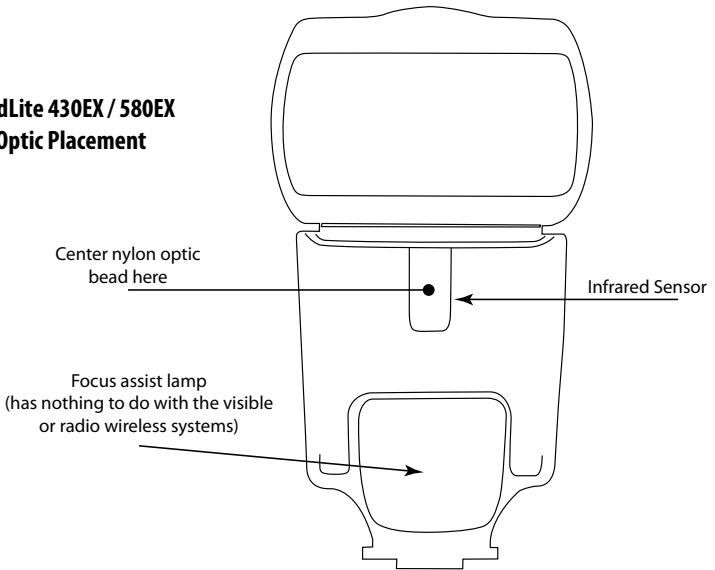


Fig 2-3
Canon SpeedLite 430EX / 580EX
Slave Flash Optic Placement



Slave Flash Optic Placement

Fig 2-4
Canon SpeedLite 550EX
Slave Flash Optic Placement

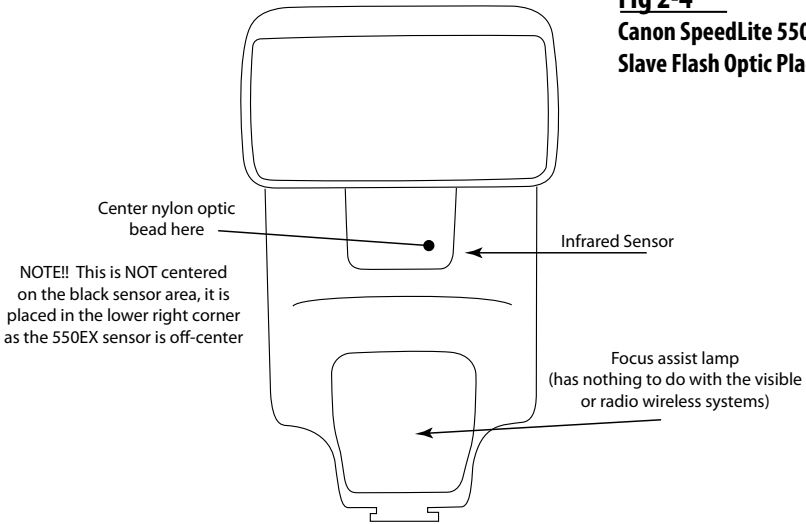
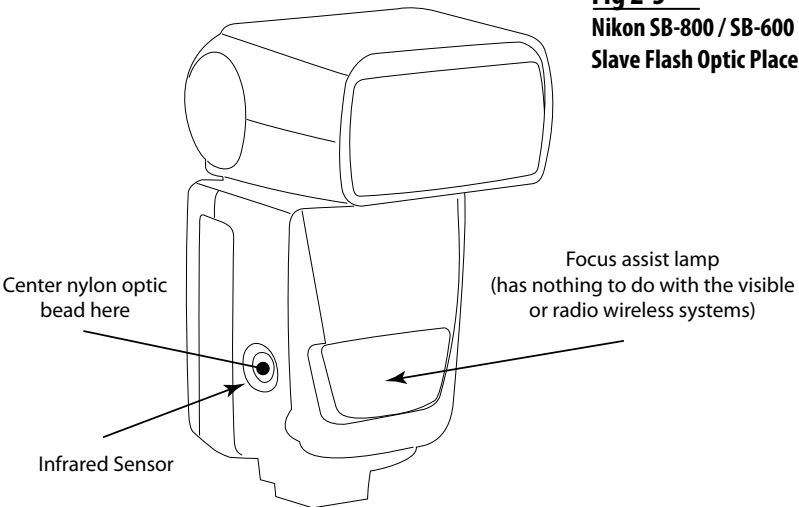


Fig 2-5
Nikon SB-800 / SB-600
Slave Flash Optic Placement



RadioPopper P1 Radio Wireless System

Operation: RadioPopper P1 Transmitter - QUICK REFERENCE

Power On / Off - Press and hold the Power Button for approx one second. Green LED on indicates “power on”, Green LED off indicates “power off”.

Radio Link - When the Link LED is lit, the radio is transmitting a carrier signal.

Manual Radio Sleep - To ‘sleep’ the radio and stop broadcasting (to save battery or to share the frequency with a second photographer or assistant) - press the Link Button for one second until Link LED goes out.

Manual Radio Wake - Tap the Link Button one time to re-activate the radio transmitting.

Auto Radio Sleep - After 7 minutes of inactivity (no shots taken, timer not manually reset), the radio will stop broadcasting, the Link LED will go dark and the unit will sleep.

Auto Radio Wake - If radio has begun to sleep automatically, activating your flash one time (taking a shot) or tapping the Link Button will wake the radio and resume transmitting.

Timer Reset - Take a shot (activate the flash) or tap the Link Button to reset the 7 minute sleep timer. Link LED will strobe momentarily indicating button press.

Test Broadcast - Tap the Link Button one time, this resets the 7 minute timer and simultaneously sends a test broadcast. Any P1 Receiver within range and operating properly will blink both of its LED’s together several times indicating clean reception and proper operation.

Shot Indicator - After activating the Master Flash or IR Commander (you take a shot), the Link LED will momentarily strobe indicating a signal was received by the magnetic pickup sensor.

Operation: RadioPopper P1 Receiver - QUICK REFERENCE

Power On / Off - Press and hold the Power Button for approx one second. Green LED on indicates “power on”, Green LED off indicates “power off”.

Radio Link - The Link LED lights solid whenever the P1 Receiver is locked onto a carrier signal from a P1 Transmitter.

Radio Not Linked - When radio link is lost, is interrupted, or is out of range, the P1 Receiver will frantically search the air waves attempting to re-acquire the radio signal.

Sleep Mode - If no signal is found, the P1 Receiver alternates between sleeping and looking for a signal, blinking the Power LED on each wake cycle.

Operating Instructions

Operation: Detailed P1 Transmitter Operating Instructions

Power On / Off

Press and hold the Power Button for approx one second to alternate between Power On and Power Off.

Radio Link & Broadcast

The RadioPopper P1 Transmitter has been designed to conserve power, to automatically stop broadcasting when not in use, and to allow several photographers to “share” a single radio signal through a system of easily turning the radio transmitter on and off without fully powering down the entire unit.

- 1) When power is first turned on, the Link LED lights indicating the radio is broadcasting. The Link LED is always lit whenever the radio is broadcasting, and is dark whenever the radio is not broadcasting.
- 2) When in an environment with multiple photographers, only one P1 Transmitter may be broadcasting at any given time within the same general area.

Manually Sleeping the Radio

To temporarily deactivate the radio and stop broadcasting (either to save power or to allow another photographer to activate their own transmitter and control the same set of slave flashes) - simple press and hold the Link Button for one second to turn off the Link LED. The radio is now sleeping and will not resume broadcasting until the Link LED is pressed again. To wake the radio and resume broadcasting, tap the Link Button one time. The Link LED should light indicating the radio is again broadcasting.

Automatic Radio Sleep

The P1 Transmitter will automatically stop broadcasting and go into sleep mode if there are no shots taken, or if the Link Button is not pressed for about seven minutes. This feature insures the radio frequency will be clear for another photographer or assistant to use if the first unit becomes inactive. It also dramatically reduces power consumption if an active transmitter is forgotten about. This automatic sleep feature may not be disabled.

Resetting Sleep Timer

The sleep timer is reset each time a shot is taken. It may also be reset manually by momentarily tapping the Link Button. This also sends a test broadcast to all actively linked P1 Receiver units.

Auto Radio Wake

If the radio went to sleep as a result of the sleep timer running out, it will automatically wake up and resume normal broadcasting if the Master flash is activated by taking a shot. The P1 Transmitter will not broadcast this first activation so slave flashes will not activate. It will however resume an active state to broadcast any follow-up shots. You may also awake the radio after entering the automatic sleep mode by tapping the Link Button one time to resume normal broadcast operation.

RadioPopper P1 Radio Wireless System

Timer Reset - Take a shot (activate the flash) or tap the Link Button to reset the 7 minute sleep timer. Link LED will strobe momentarily indicating button press.

Test Broadcast - Tap the Link Button one time, this resets the 7 minute timer and simultaneously sends a test broadcast. Any P1 Receiver within range and operating properly will blink both of its LED's together several times indicating clean reception and proper operation.

Shot Indicator - After activating the Master Flash or IR Commander (you take a shot), the Link LED will momentarily strobe indicating a signal was received by the magnetic pickup sensor.

Operation: Detailed P1 Receiver Operating Instructions

Power On / Off

Press and hold the Power Button for approx one second to alternate between Power On and Power Off.

Radio Link

Each P1 Receiver will indicate it has achieved a perfect radio link to an active P1 Transmitter by lighting the orange Link LED. Whenever this LED is on, there exists a 100% perfectly clear connection between the P1 Transmitter and P1 Receiver. The instant the carrier signal from the transmitter is lost, the Link LED will go dark, and will light again the instant a signal is again locked.

You may observe the Link LED begin to strobe off and on when moving around. This is normal as any degradation of the radio signal will be visible by the Link LED strobing on and off. Once the P1 Transmitter and P1 Receiver are again stationary, the Link LED will generally stabilize.

This is also helpful for evaluating range in a given environment. As you reach the usable limits of range the Link LED will begin to strobe off and on or may go out all together. At the extremes of range you may also notice various odd behavior - both LED's may blink together (as the random clicking in and out of the radio signal may trigger the P1 Receiver to think it has received a test broadcast from the P1 Transmitter), and your Slave flash may occasionally emit pops of light.

NOTE: If your flash behaves erratically or fails to activate after being placed near the extremes of range or in environments with lots of background radio interference, the erratic behavior of your slave flash can often be cleared by pressing the "Pilot" button on your Master Flash or IR Commander a few times. Sending a "Pilot" signal should briefly pop all slave flashes and also seems to clear their memory of any confusion caused by random pulses of light caused by stray radio signals.

Your P1 Receiver has been designed to react to, and attempt to relay any radio signal it receives in attempting to activate your Slave flash which causes some of the odd behavior above, but also makes it possible to activate the flash a certain percentage of the time even at extremely long ranges. You should not observe much odd behavior in normal shooting situations at more modest ranges.

Operating Instructions

De-Link Sleep

When a carrier radio signal from a P1 Transmitter is found and locked onto, the Power LED and Link LED light solid on the P1 Receiver. When the carrier signal is lost even very briefly, the Link LED will go dark as explained in the previous section.

When the signal is lost, your P1 Receiver will search frantically in attempting to re-acquire it. It will keep this up for about 20 seconds. It then begins to get bored and starts napping.

To conserve power, your P1 Receiver has been designed to enter a cycle of sleeping and waking when no carrier signal from an active P1 Transmitter is found. At first the naps are brief - about 1/4 second. As time goes on and no signal is found, these naps extend to a maximum duration of 3 seconds each.

During each "sleep" cycle, the Power LED will go dark, and upon each waking - your P1 Receiver will power up the radio and sniff the air waves to see if a carrier signal exists from a P1 Transmitter. The Power LED will blink during the wake cycle. If no carrier signal is found, the P1 Receiver goes back to sleep.

As soon as a signal is found and re-acquired, the Link LED is again lit, and loosing this signal will again cause the P1 Receiver to quickly search for it, and eventually resume a napping pattern.

This wake and nap pattern was designed to conserve battery power when no link exists. You may use this to setup a Slave flash several hours before you actually need it and allow your P1 Receiver to essentially "stand by" without much battery use. Some Slave flashes will also go into standby and will wake when seeing the signal from the P1 Receiver. Please test on your own to see if your Slave flash is capable of awaking from standby when seeing a signal.

NOTE: When attempting to turn off a napping P1 Receiver, the one second you press and hold the Power Button to cause the power down will not begin until the next timed "wake" cycle of the P1 Receiver - when it is sleeping, it won't see your button press so you may need to hold the button longer than usual to power off the unit.

RadioPopper P1 Radio Wireless System

Adjusting the Sync Interval

Before we describe how to adjust the Sync Interval, some background explanation is in order. If you're the non-technical type, skip ahead to the next page. This sounds pretty complicated and scary, but it's not really - nothing to be afraid of. In most cases you'll make this adjustment once (if at all) then forget about it.

In order for the slave flash to respond correctly to the "reproduced" light signal from the P1 Receiver, the timing of the reproduced signal must be exceptionally accurate. To insure the original signal and the reproduced signal match perfectly, both the P1 Transmitter and the P1 Receiver must operate on the same timing clock, and these two clocks must remain in sync with each other to about a millionth of a second.

To accomplish this, the P1 Transmitter sends out a carrier signal at a particular timing and the receivers use this signal to maintain their timing clocks synchronized to that of the transmitter.

It is important that the timing of this "clock" signal be adjusted so that it does not conflict with the timing of the light pulses emitted by your Master Flash or IR Commander. There's a lot of math and a thirty minute discussion behind this so we'll spare you the details. Suffice to say your P1 system may require a quick and painless adjustment to this timing during first use, or if you make any major changes to your gear.

The timing of the light pulses created by your Master Flash or IR Commander are determined by a combination of what type of camera body you're using along with what device you're using as your Master Flash or IR Commander on the hot shoe. Because this can vary somewhat depending on your particular hardware setup, you have the ability to adjust this timing interval to iron out any conflict that may exist.

How do I know if the Sync Interval needs adjusting?

The sync interval may be adjusted to a setting of 1 to 10. Your P1 Transmitter ships on setting "10" which works well for most hardware. If your slave flash is being activated correctly by radio, you likely will not need to adjust this setting.

Indicating an adjustment is required - you will see your slave flash emit a brief burst of light, but no flash will be visible in your actual exposure. What you are seeing is your slave flash emitting a pre-flash but no main flash. If you observe this behavior in a majority of your shots - adjusting the Sync Interval will likely solve the problem.

You may need to re-adjust this interval if you go to a different class of camera body, a different brand, or if you begin shooting lots of flash groups (you're using A, B, and C flash groups for example).

With any given mix of camera body and slave flash hardware, there will likely be several Sync Interval settings that will not work and several that will. In any case, you should be able to find at least one setting that works reliably for your hardware.

Sync Interval Adjustment

Adjusting the Sync Interval - Instructions

If your P1 system appears to be operating correctly - you're getting reliable triggering of slave flashes and you see the flash adding light to your actual exposures, then you should not make any change to the Sync Interval.

The Sync Interval may be adjusted to a setting of between "1" and "10". Your P1 Transmitter ships on a default setting of "10" which works well with most hardware.

Starting Adjustment

Press and hold both Power Button and Link Button on your P1 Transmitter at the same time for approximately one second until both Power LED and Link LED strobe together. Release Power Button and Link Button.

Current Interval Display

Your P1 Transmitter will indicate the current Sync Interval by blinking the Link LED in sets corresponding to the current adjustment point. Sets of 4 blinks for example represent a Sync Interval adjustment of "4". There is a clear pause between sets of blinks. Count the blinks to determine the current adjustment.

Increment Adjustment

To increment the current setting, press the Link Button briefly. The Power LED will light during the button press and the P1 Transmitter will increment its count. Each press of the Link Button will increment the count by one up to setting "10", then it will loop back to setting "1".

Lock-In New Adjustment

Once the new setting is reached, lock it in by pressing the Power Button one time. The P1 Transmitter will confirm by blinking both LED's together a number of times corresponding to the new Sync Interval setting. The P1 Transmitter will then resume normal operation.

Resuming Normal Operation

P1 Receivers are designed to find and lock onto any Sync Interval carrier signal - they require no adjustment after changing this setting on your P1 Transmitter. They should automatically re-link to your P1 Transmitter.

Choosing a Setting

So which setting should you choose?? There's a bit of trial and error involved. Again, "10" works great for most hardware. You should sequentially increment the setting by 1 step at a time and test fire the system at each setting. You should eventually find a setting that is reliable in triggering your slave flashes.

Suggested Settings

In our testing we've found setting "10" (which is the default setting) works with the greatest variety of hardware. A few suggested alternates for Canon are 4 and 5, and Nikon setting 4 works well.

RadioPopper P1 Radio Wireless System

Range and Reliability

Please see the Release Notes included with this manual or as available on our website at www.radiopopper.com for a more detailed discussion of all the specifics regarding range and reliability.

It is important to understand the limitations of your P1 system so you may comfortably work within them. You will have occasional misfires which may be caused by a number of factors. Reading through this section will go a long way to maximizing reliability and system usefulness in your type of photography.

How E TTL and iTTL Work

Many of the misfire events you may experience are directly attributable to the E TTL and iTTL systems built into the flashes themselves, rather than the P1 radio system. Please read this section to familiarize yourself with how your flash system operates.

Your E TTL or iTTL system works by causing the wireless Slave flash to emit two separate bursts of light. The first burst, called a “pre-flash”, is a dim flash of a known amount of light. Before your camera’s shutter opens, your camera’s metering system measures this first “pre-flash” and based upon it, calculates the correct amount of light needed to properly expose your image. Your camera then opens the shutter and commands the wireless Slave flash to emit the second burst, the “Main Flash” that actually exposes your image.

Pre-Flash with no Main-Flash

One of the most common mis-fire events you are likely to observe is the wireless Slave flash emitting a short “pre-flash”, but you see no flash contributing to your actual exposure when looking at the picture after the shot in your camera’s display. It may appear your flash is “firing”, but you don’t see any flash in your exposed image.

NOTE: If you are using high speed sync, please refer ahead to the High Speed Sync note on Page 26.

This type of mis-fire may be caused by a combination of several factors and will likely occur in a certain percentage of exposures.

NOTE: This type of mis-fire will only happen if you are actually using the E TTL or iTTL function of your camera (the “automatic flash” mode). Some camera bodies, Master Flash devices or IR Controller devices allow you to remotely adjust the power of your wireless slave flashes manually. In this case they fire at the prescribed power level with each shot without performing a “pre-flash”. You may find greatest system reliability especially at longer ranges when setting your flashes to this manual mode. Please refer to your camera and flash owner’s manuals as different hardware may vary greatly regarding features for remotely setting the power level of slave flashes. If this paragraph confused you, disregard and just set your flashes so they display “E TTL”, “iTTL”, or something similar in their display.

1. If you’re getting a lot of these misfires (anything much over 10% of your images), you should adjust the Sync Interval setting on the transmitter (Page 20). A bit of trial and error here should dramatically improve reliability.
2. In much testing of E TTL and iTTL systems *without* the P1 System installed, we’ve found a misfire rate of 5% or more when the Master flash is fired directly into the Slave flash at a range of a few feet. It is clear that even in the most ideal

Trouble Shooting

situations, a certain number of mis-fires will occur purely attributable to inconsistencies in the Master and Slave flash system itself. As the RadioPopper P1 system simply repeats the signal with a high degree of accuracy, these mis-fires attributable solely to the flash system itself will still happen.

3. Your camera's metering system must be able to observe the amount of light being emitted by the wireless Slave during the Pre-Flash. If it doesn't see this light, it will not command the flash to emit a Main Flash. If you're shooting at long ranges (and we know you'll go outside and try it down the street - right?) - remember you're shooting much beyond the range your camera's metering system was intended to be able to measure this Pre-Flash.

If you're shooting with anything other than a tight telephoto lens at these longer ranges, or if the Slave flash is hidden to such an extent that it contributes very little light, you'll notice much reduced reliability. In these situations, you should set your Slave flash to operate in Manual mode. Some Master flash devices allow you to remotely adjust the setting of the wireless Slave from the Master device. This (with most hardware) eliminates the whole pre-flash logic which should greatly improve reliability in these longer range situations.

4. Consider the Recycle Time of your remote flashes. When shooting wireless, you tend to shoot faster than usual without waiting for a full recycle. You've also probably got that flash placed some distance away from the subject which means it's firing at a higher power, causing further delay to recycle. This also applies with High Speed Sync - which tends to make your Slave flash cycle more deeply.

A flash that is not completely recycled will often still emit a pre-flash but won't have enough 'charge' to fire the main flash. Also note that the red blinking "beacon" light on the front of the flash (on Canon hardware) often starts blinking before the flash is actually fully recycled. You may need to wait a couple seconds after this beacon starts blinking before actually taking the next shot.

Sidenote: We HIGHLY recommend PowerEx rechargeable NiMH batteries for your flashes. They cycle way faster than anything else off the shelf, even with the external battery pack. They haven't paid us to say that, we just think they're awesome. Get them at mahaenergy.com.

5. Sometimes a Slave flash may get confused and stop responding correctly. No kidding. This happens without the P1 Radio system also - many people have had the experience of a Slave flash acting "funny" when using the 'line of sight' system even without the RadioPopper P1 system.

This "getting confused" seems to have more to do with the Slave flash than the P1 Radio. To "un-confuse" it, try pressing the Pilot button on the back of your Master Flash or IR Commander. This should cause all slave flashes to emit a short pop of light indicating they are alive. This also seems to "clear" any confusion. Do this Pilot operation a couple times to be sure.

6. Try changing the E TTL channel on your flashes. This sounds strange, but even before the RadioPopper system came along, many photographers have found greater reliability on certain E TTL channels. If you're using a SpeedLite 550EX as your master, set it to E TTL channel 4, or 3 as an alternate as it won't work on E TTL channels 1 or 2.

7. Check your batteries. All of them. There is no "auto cut off" when the batteries in your P1 Transmitter and P1 Receivers

RadioPopper P1 Radio Wireless System

start to die. You will start seeing increased numbers of mis-fires when either unit begins to run low. As the drain is similar on both units, it's a good idea to always replace batteries in all units at the same time. Also note the battery in your Master Flash or IR Commander may be getting low.

8. Mis-fires will increase with greater range. In normal shooting situations, activation and operation should be pretty reliable. As you begin to put objects, walls, buildings, and city streets between P1 units, you will at some point notice an increase in the number of mis-fires.

9. Some mis-fires are unavoidable. Due to the extreme speed at which the P1 system must operate, there is no error checking or repeating of the radio signal as with other radio based flash triggering products. Unfortunately, the flash manufacturers chose to time the visual pulses of light impossibly close together. The P1 system reads these pulses of light and does it's best to relay them. The message is sent, and generally it's received and operates the slave flash correctly. See the Release Notes for a more detailed discussion.

The source of most mis-fires attributable to the P1 System is background radio interference. We have built a nearly perfectly tuned radio system into the RadioPopper P1 and it uses a frequency not shared by many other devices (it's nowhere near the frequency used by wireless phones for example). However, other electronic devices present in most environments emit a certain amount of unintentional radio waves. This background radiation will foul a certain number of shots, but the actual number should be fairly minimal and overall, you should find performance quite reliable.

No Flash at All

The second mis-fire event you may observe is the Slave flash not emitting any light at all. This is likely caused by incorrect configuration of the flash system itself (aside from the RadioPopper P1 system) or a problem with system installation.

1. Uncover the infrared sensor on your Slave flash (if you've used an adhesive cover or tape to attach the P1 Receiver optic over the sensor). Power off the P1 Transmitter and Receiver and attempt to fire the Slave flash at short range using the normal line of sight system. It must operate correctly using the line of sight system at short range before it will operate using the P1 System as the P1 is simply repeating the visible signal.

See the owner's manual that came with your flash and camera body to insure you've configured your existing hardware correctly. You may want to double check the Master and Slave units are set to the same E TTL channels, that the flash on the hot-shoe is set to "Master" and the remote flash is set to "Slave" and so on.

Once your flashes are operating correctly using the line of sight system, power up your P1 Transmitter and P1 Receivers and continue....

2. When the radio is activated on the P1 Transmitter (see Operating Instructions earlier in this manual), observe the Link LED (orange) is lit on the P1 Transmitter. This should also cause the Link LED to light on the P1 Receiver indicating there is a good radio link established between the two units.

If the Link LED is lit on your P1 Transmitter, but the Link LED does not light on your P1 Receiver(s), the receiver(s) may be

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out of range, there may exist some background radio interference in your environment preventing a good link (including another P1 Transmitter being used by another photographer near by), or one of your units may be damaged. Move to another location and try it again to eliminate the possibility of some source of radio interference operating near to you.

3. When a good link is established (the Link LED lights and remains lit solid on the P1 Receiver), tap the Link Button on the P1 Transmitter one time quickly. This should cause the Link LED on the P1 Transmitter to strobe. It will also send a test message meeting the same timing requirements of an actual flash trigger event to all active P1 Receivers. If this message is received correctly, they will blink both of their LED's together several times.

This indicates a good radio connection exists and the units are clearly communicating with speed an accuracy that should allow normal operation.

4. Install your P1 Transmitter on top of your Master Flash or IR Commander as described in the Installation Instructions section of this manual. When you take a shot, the Link LED on the P1 Transmitter should strobe briefly following the shot. This indicates the magnetic sensor on the P1 Transmitter is picking up a signal from your Master Flash or IR Commander. It does not necessarily mean the signal is complete or correct, simply that a signal is being received.

If the Link LED of the P1 Transmitter does not strobe when shooting, re-check your installation and that the batteries in your P1 Transmitter are good, as well as checking the batteries in your IR Commander.

You may try adjusting the placement of the P1 Transmitter on top of your Maser device slightly, though much adjustment should not be required. Even if the Link LED on the P1 Transmitter does strobe after a shot, it is possible it may not be picking up the complete signal from your Master Flash or IR Commander. Again, this is rare but possible.

The sensor (the "bead" hanging on the side of the P1 Transmitter) should be 1/2" to 1" above the plastic surface of your flash, and should be placed rear of the front edge of the flash 1/2" to 1". Moving this sensor closer to the flash lens (where the light comes out) may actually degrade performance. The magnetic signal is strongest and most consistent a bit further back from the flash lens and a short distance above the plastic exterior of the flash.

5. Check the placement of the nylon bead at the end of the optic tube on the P1 Receiver. Insure it is placed over the infrared sensor of your flash as per the Installation Instructions in this manual. It should NOT be placed over the red plastic piece on your slave flash - this is not the infrared sensor. On the SpeedLite 550EX used as a slave note the infrared sensor is not centered on the black window, it's in the lower right corner. See Fig XX in this manual.

Also check how the optic is inserted into the sleeve on the side of the P1 Receiver.

6. Make sure there is no excessive bend in the optic tube extending away from the P1 Receiver. A bend any tighter than what would wrap around your finger should be avoided. Too tight of a radius and light may not travel through the tube as efficiently as designed and could lead to mis-fires.

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Trouble Shooting other Miscellaneous Issues

One of my P1's have become non-responsive

You may observe a P1 unit "freeze up" and become non-responsive to button presses, won't turn off, won't de-link or re-link and so on. This is usually caused by a low battery. There is no "low voltage cutoff" in either unit. We've designed them to allow the battery to continue to drain until some part of the circuitry can no longer function to allow longest use of a battery, or to squeeze the last bit of power when you're in a tight shooting situation and can't replace batteries.

A new Alkaline battery (the non-rechargeable ones you get from the store) should last 5 to 10 hours of continual transmit time. Rechargeables will probably go longer, but remember that rechargeable batteries tend to naturally drain and die off on their own after a couple days of non-use.

High Speed Sync - I see the flash fire, but the image is still dark

This may also be seen as a "pre-flash with no main flash" type of mis-fire as described above, but is not actually a mis-fire at all. When playing with High Speed Sync it must be realized that your flash produces an exponentially reduced amount of light the higher you push the shutter speed. If you're shooting at 1/8000 (and we know you'll try it) your flash is emitting very little light. If you place the flash much distance from the subject or through a diffuser, you may not see the contribution of light to your image, even though it is indeed firing correctly.

Try reducing your shutter speed or getting the flash closer to the subject.

Dealing with Radio Interference

It is easy to tell if you are in an environment with background radio interference. If your slave flashes begin spurritically emitting short or full bursts of light (without you triggering them), or if you notice the Link light on your P1 Receivers is flickering, there is likely some background interference present.

Your P1 Receiver is highly sensitive to fluctuations in the radio signal which give it the required high speed performance. It is also tuned to a very narrow band which means it tends to reject most forms of radio interference. Occasionally, you will still encounter situations where some source of background radio signals may cause interference.

This interference may be another radio transmitter, or it may be another electronic device. One common source is fluorescent light bulbs which are beginning to fail, and old computer monitors. Generally, you can avoid this interference by moving out of the immediate area - sometimes moving just ten or fifteen feet is enough to restore normal reliable operation. Your P1 system is NOT effected by cellular phones, 900mhz wireless phones or pagers - these devices are tuned well away from the frequency used by the P1 system.

Miscellaneous Tips

Miscellaneous Tips & Answers to Frequently Asked Questions

Tip / Question: Antenna Placement

Does the antenna have to point straight up? No. You will achieve the greatest range with both antennas pointed straight up. However in most common shooting situations, the radio signal reflects around the environment enough that either antenna can be pointed any direction and still reliably operate. Pointing the antennas straight up is more important at longer ranges and in wide open areas (where there are no walls or buildings for the signal to bounce off of).

The P1 Transmitter antenna emits the least amount of energy straight down. If you tilt your camera to the left for a vertical shot, a P1 Receiver placed on your right may lose the signal as the transmitter signal must go through your flash and camera body. You're only likely to experience this in wide open areas and at somewhat longer ranges.

Tip: Getting Maximum Range

If you really want to maximize range for an exceptionally long shot, set your flash in a manual mode (no E TTL or iTTL, eliminating the need for the camera to see a "pre-flash"). Point the P1 Transmitter antenna straight up. Point your P1 Receiver antenna straight up and check that it is on the same side of the flash as the side you're shooting from (so the signal doesn't have to travel through the flash itself to reach the antenna), and attempt to elevate both transmitter and receiver off the ground a bit. You may also order a high gain Dipole antenna from our online store for your P1 Receivers which will give you a bit more range.

Tip: Maximizing Radio Performance

Radio signals sometimes behave in strange ways - understanding how your radio system works will help insure predictable performance. Generally, radio signals emit in every direction and bounce off of surrounding structures such that little care is needed in the placement or orientation of your hardware, but certain situations will require more consideration.

Particularly in wide open spaces with little or no metallic objects (cars, siding, structures, etc.) the radio signals emit outward and have nothing to "bounce off of". In these situations some care must be taken to avoid placing dense objects between transmitter and receiver, particularly groups of people, tile, and concrete structures.

For example, in an open field, placing a P1 Receiver behind a brick and concrete wall - even just a few feet away may lead to spurratic radio performance as the radio signals won't penetrate the wall. If on the other hand this same scene was set next to a parking lot with lots of metal cars, the radio signal would 'reflect' off those cars and likely bounce back to the other side of the wall.

If there are no dense objects between the units, it is possible to achieve ranges of 300+ ft in open spaces that are clear of background radio interference.

Generally in enclosed environments this is not an issue as there is sufficient structure to reflect radio signals in every direction.

Limited Warranty
