radiopopper ™

TRANSMITTER PX

RadioPopper PX 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.

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: V4TRPPXTX506

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.

Table of Contents

IMPORTANT NOTE:

To comply with FCC RF exposure compliance requirements, the following antenna installation and device operating configurations must be satisfied - This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

PRODUCT PATENT(S) PENDING

Introduction

Thank you for your purchase of the RadioPopper PX wireless radio system. We hope you'll find this system to be a valuable tool in your creative lighting, giving you flexibility and control never before possible.

The RadioPopper PX 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 ETTL or iTTL logic system. It's also the world's first product to effectively provide you high speed sync by radio. Enjoy.

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

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

How It Works

The RadioPopper PX system is beautifully simple. Quickly mount the PX Transmitter to your Master flash, a PX Receiver to each slave flash, and your current master and slave wireless flash system continues to function just as it always has, minus the line of sight limitation.

The RadioPopper PX Transmitter "listens" to the light signal being created inside the master flash unit or remote commander on your camera's hot shoe. The PX Transmitter sends this signal by radio where it is read by the RadioPopper PX Receiver. The receiver then uses it's own internal light source to "reproduce" this light signal. The light is emitted through a window on the back of the Receiver unit directly into 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 is easy. Just place the RadioPopper PX 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 PX Receiver in a similar way, anchor the Receiver in such a way that the window with the green circle is placed directly over the black window (the IR sensor) of your slave flash. 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 ETTL and iTTL support along with high speed sync all the way to 1/8000, by radio.

RadioPopper PX Radio Wireless System

Compatible Hardware:

The PX System has been tested and found to be compatible with the following flash hardware. See our website for updates as we test and certify compatibility with additional hardware.

Canon Master / Commander Devices:
SpeedLite 550EX, 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[1]

Nikon Slave / Remote Devices:
SB-800 AF Speedlight, SB-600 AF Speedlight

Note(1): The PX 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. A mount may be available in the future. Improvised mounting should attempt to place the external pickup sensor directly behind the flash tube inside the pop-up flash.

Specifications:

Both PX Transmitter and PX Receiver have similar specifications as follows.

Dimensions : 2.0" x 2.0" x 0.8" (50mm x 50mm x 20mm)
Weight: 2.0 ounces / 60 grams (Including battery and antenna during normal operation)
Battery: Two "AAA" Sized Standard Batteries / Alkaline, NiCad, or NiMH / 0.9 volt to 1.6 volt
Battery Life: Approx 25 Hours continual active transmit time for Std Alkaline battery.
Radio Frequency: 916 Mhz, ISM Band
Radio Range: 300 ft to 1750 ft depending on conditions and environment[2]

Note(2): Please refer to the section "Maximizing Radio Performance" (Pg. 22) in this manual for more information.

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

DO NOT REMOVE OR TAMPER WITH THE CIRCUIT BOARD!
Some of the components inside your PX Transmitters and PX 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.

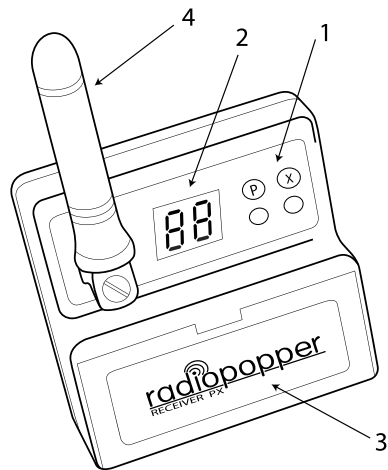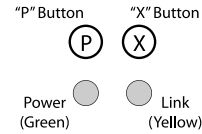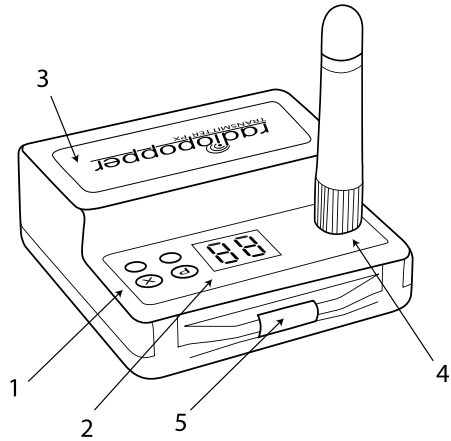### YOUR POPPERS CAN'T SWIM!! KEEP THEM DRY!!
The new splash-proof design of the PX goes a long way to keeping the wet stuff out. However, they are *not* "waterproof". Don't use them outside in the rain, to photograph objects under water, or in any other enviroment that may allow water to enter the physical enclosure or battery area.

If you dunk them, it may be too late. Should you do manage to expose a RadioPopper to anything wet, remove the batteries as quickly as possible and allow it 24 hours to dry. You may find it has come back to life. Allowing anything wet inside the case of your PX Transmitter or PX Receiver will promptly void the warranty.

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 always email us at support@radiopopper.com

RadioPopper PX Radio Wireless System

PX Transmitter

"P" Button   "X" Button

ⓟ   ⓧ

Power (Green)   Link (Yellow)

PX Receiver

Leap Devices, LLC
Made in USA
PATENT PENDING

IC: 7822A-RPPXTX506

Receiver Rear

Parts Description
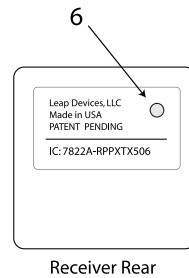
Transmitter Parts

1) User Interface - Buttons and Lights
2) Digital Display
3) Battery Compartment Door
4) Antenna
5) Magnetic / Inductive / Magic Signal Pickup Sensor

Receiver Parts

1) User Interface - Buttons and Lights
2) Digital Display
3) Battery Compartment Door
4) Antenna
6) Light Source - IR Signal Emission Window

Also Included in Kit or as Accessories (Not Pictured)

1) Your first set of AAA Batteries
2) Industrial strength genuine Velcro fasteners
3) High strength double sided foam tape
4) Alcohol swab(s) for prep and clean of attachment points
5) This instruction manual
6) Antenna for Transmitter (the straight one)
7) Antenna for Receiver (the one with the 90 degree bend)

RadioPopper PX Radio Wireless System

Installation: RadioPopper PX Transmitter

1) Remove the battery compartment door on the top side of the unit.

2) Remove the cover and insert two (2) AAA size batteries into the battery holder. It is very important to follow the polarity direction indicated on the circuit board to ensure unit operation and avoid possible transmitter damage.

3) About one second after inserting the batteries the Power light will blink briefly indicating proper battery placement and that the unit is functioning correctly.

4) Replace the battery compartment door.

5) Select the approximate mounting location on top of your Master Flash or IR Commander (supplied by your camera manufacturer). Ensure this area is clean. Use the included alcohol swab to clean this area, as well as the under side of the PX 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 PX Transmitter unit. We recommend placing the "rough" hook side of the Velcro against the transmitter, and the soft side of the Velcro against your flash or IR commander.

7) Hold the PX Transmitter with Velcro attached over the approximate mounting location on the intended Master flash unit. Compare location to the picture 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 PX 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 ensure maximum long term adhesion.

9) Install the supplied antenna (the straight one) by screwing it onto the antenna connector on the face of the PX Transmitter.

WARNING: Do not power up the PX Transmitter without the antenna installed - doing so could damage the output stage of the radio transmitter.

WARNING: Use only the supplied antenna on the PX 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 PX 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 PX Transmitter. This tends to "set" the Velcro pads together.

Installation

Installation: RadioPopper PX Receiver

1) Remove battery compartment cover and insert batteries, observing for a brief blinking of the Green Power LED, just as you did with the PX Transmitter. Replace the battery compartment cover.

2) Place the supplied foam gromet over the IR light imission port (noted by a green circle) - align the hole in the gromet to the IR light emission port.

3) Select a mounting location where the IR light emission port will emit directly into the IR sensor of your slave flash. See diagrams for appropriate and suggested mounting locations.

4) Ensure the mounting area is clean. Use the included alcohol swab to clean this area, as well as the under side of the PX 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 PX Receiver unit.

6) Hold the PX Receiver with Velcro attached over the approximate mounting location on the intended Slave flash unit. 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 PX 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.

8) Install the supplied antenna (the one with the 90 degree bend) by screwing it onto the antenna connector on the face of the PX Receiver.

9) Insure the supplied foam gromet forms a light-tight seal between the PX Receiver and the black IR sensor window on your slave flash. Adjust fine placement as necessary to achieve a light-tight seal.

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.

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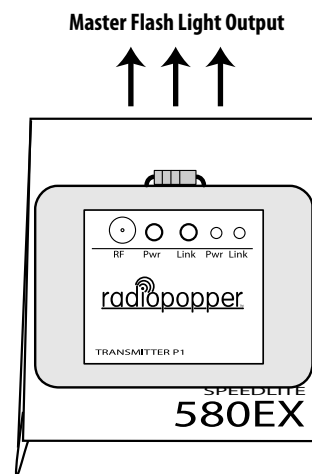
Transmitter Mounting on Master Flash Top View (looking down from top)

Transmmitter should be just about centered on top of the master flash. The pickup sensor should point forward toward the end of the flash that emitts 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 PX Transmitter on other hardware such as the Canon ST-E2 and Nikon SU-800 IR Commanders, the mounting is essentially the same. Mount the PX 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 PX 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 PX transmitter behind the flash with the magenetic 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.

RadioPopper PX Radio Wireless System

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

Center nylon optic
bead here

Focus assist lamp
(has nothing to do with the visible
or radio wireless systems)

Infrared Sensor

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

Center nylon optic
bead here

Infrared Sensor

Focus assist lamp
(has nothing to do with the visible
or radio wireless systems)

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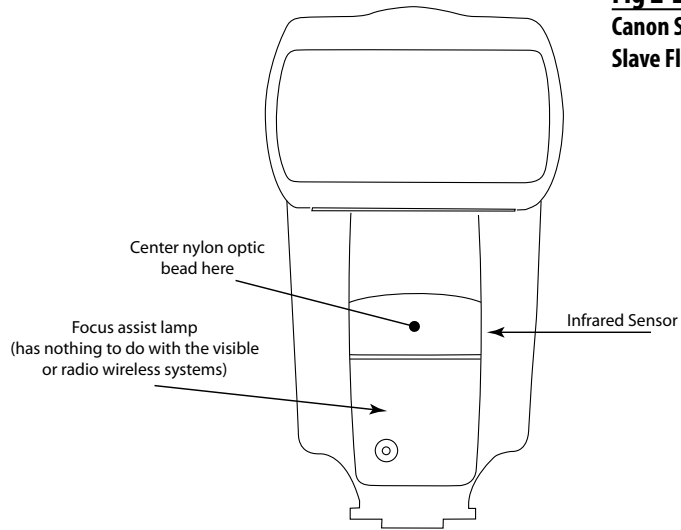
Fig 2-4
Canon SpeedLite 550EX
Slave Flash Optic Placement

Center nylon optic
bead here

Infrared Sensor

NOTE!! This is NOT centered
on the black sensor area, it is
placed in the lower right corner
as the 550EX sensor is off-center

Focus assist lamp
(has nothing to do with the visible
or radio wireless systems)

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

Center nylon optic
bead here

Focus assist lamp
(has nothing to do with the visible
or radio wireless systems)

Infrared Sensor
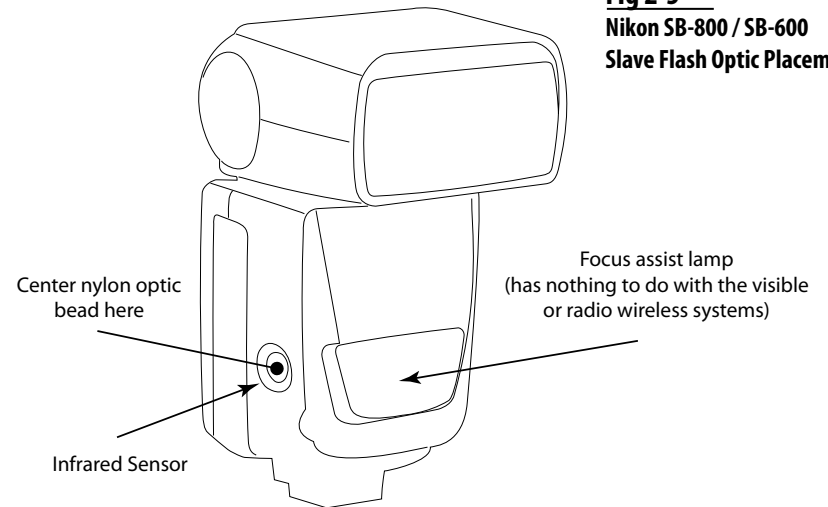
Operation: RadioPopper PX Transmitter - QUICK REFERENCE

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

Enter Menu Mode - Tap the "X" button one time to enter Menu Mode. Once in Menu Mode, you will move to the next menu each time the "P" button is pressed, and you will adjust the setting of the current menu by pressing the "X" button.

IMPORTANT NOTE!!! When in Menu Mode, the radio will NOT be active for normal operation. If you attempt to activate the system by taking a shot on your camera while in Menu Mode, the PX Transmitter will not send any radio signals. Similarly, the PX Receiver will not receive or respond to any radio signals while in Menu Mode. To exit Menu Mode and resume normal operation, press the "P" button repeatedly until the Digital Display goes dark. You should also observe the Link LED strobe momentarily which indicates the radio has been reset and is in normal operating mode.

"b" - Battery Level - A full set of batteries reads "b9", a dead set reads "b1". Level will decrement as battery power is used. You may quickly exit the Battery Level screen and imediately return to normal operating mode by tapping the "X" button once while viewing the battery level. This makes quickly checking the battery level easy by simply tapping the "X" button twice - once to view the level, and once again to quickly resume normal transmitting operation.

"L1, L2, L3" - Remote power level setting. In this mode you may tick the power level settings of up to three groups of remote slave devices up and down in steps from 01 to 32. Setting of "00" will cause the remote flash to not fire. Tap the "X" button to increment. While pressing the "X" button, tap the "P" button to decrement.

"Ch" Radio Channel - Shows the current radio channel between 01 and 16. Tap the "X" button once to view the current channel without changing it. Each successive tap of the "X" button will increase the channel, with 16 looping back to channel 01. When the desired channel is set, press the "P" button to lock in the channel and move to the next menu item.

Operation: RadioPopper PX Receiver - QUICK REFERENCE

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

Enter Menu Mode - Tap the "X" button one time to enter Menu Mode. Once in Menu Mode, you will move to the next menu each time the "P" button is pressed, and you will adjust the setting of the current menu by pressing the "X" button.

Operation: Detailed PX Transmitter Operating Instructions

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

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NOTE: It may take several seconds for sleeping PX Receivers to come out of sleep and re-aquire the signal.
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.

Operation: Detailed PX Receiver Operating Instructions

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

Enter Menu Mode - Tap the "X" button one time to enter Menu Mode. Once in Menu Mode, you will move to the next menu each time the "P" button is pressed, and you will adjust the setting of the current menu by pressing the "X" button.

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De-Link Sleep
The PX Transmitter and PX Receiver only transmit a radio signal when a shot is being taken. There is no longer any need to reference a "De-Link" or "Sleep" state as you may have been used to with the P1 Transmitter and P1 Receiver units.

Adjusting the Sync Interval

The PX Transmitter and PX Receiver no longer require the adjustment of a Sync Interval.

Adjusting the Sync Interval - Instructions

The PX Transmitter and PX Receiver no longer require the adjustment of a Sync Interval.

RadioPopper PX Radio Wireless System

About This Section

You should generally enjoy reliable and worry free operation of your RadioPopper PX system. We have designed your PX system using high quality components and quality engineering. When your camera manufacturer designed your existing "line of sight" wireless flash system, they never intended the signal to be relayed by radio. In fact, many engineers have considered a system such as the PX impossible due to the extreme high speed of the signal produced by the flash system. The line of sight "conversation" between your flashes happens so quickly that it is not possible to use industry standard methods of transmitting information by radio.

It turns out it is indeed possible to transmit a signal at the required speed and to reliably activate remote flashes by radio, though it requires a perfectly tuned receiver able to lock onto a clean radio signal. This section is provided to familiarize yourself with how radio signals work, how to maximize use of your system, and how to identify situations where you may have less than ideal performance. You should not experience significant issues with your radio system that would limit the overall usefulness of the system. You may however occasionally come into contact with various situations and environments that produce unexpected behavior. This section is provided so you will understand what you are seeing in these situations and can act accordingly to minimize the impact on your picture taking experience.

Understanding Radio Signals

Your existing "line of sight" wireless flash system operates by producing an extremely fast series of "blinks" of light. These blinks of light are seen by the slave flash. Your RadioPopper PX system transmits these "blinks" in real time by radio signal. Due to the extreme high speed of this "blink" signal, a clean radio link must be maintained between your PX Transmitter and any PX Receivers to transmit all of the "blinks" in perfect timing and without missing any blinks along the way. Understanding how the radio signal moves through space and possible sources of radio interference will help you maximize the range, reliability, and overall performance of your PX system.

The radio signal emits outward in the shape of a doughnut from the sides of the antenna. The signal is therefore strongest 360 degrees to the sides of the antenna when the antenna is pointed straight up. The weakest signal is emitted out the very point of the antenna, as well as straight downward out the bottom of the antenna.
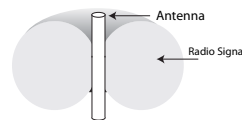
When the signal is emitted - it will continue long distances in a straight line outward from the antenna. Anything placed between the transmitter and receiver will reduce the range and strength of the signal. When the signal hits a metal surface, the surface tends to reflect the signal in new directions.

Ideal Conditions

In open air free space you can expect operation out 1,000 ft or more. This assumes the use of the standard (included) receiver antenna, and assumes no obstacles are present between the PX Transmitter antenna and the antenna on the PX Receiver. This also assumes that both antennas are pointed straight upward and there is no radio interference present.

This ideal condition range is reduced as objects are placed between the PX Transmitter and any PX Receivers.

Maximizing Radio Performance

Normal Conditions

Under normal conditions where your slave flashes are placed within 50 feet or so of the master, you should generally observe reliable and worry free operation regardless of placement or orientation. In these "normal" situations it is not necessary to pay much attention to the direction the antennas are pointing, environment, or obstacles.

In most cases it is okay to point the flash head of your master upward for bounce or when using certain types of lighting modifiers, as well as pointing the antenna to the side during vertical picture taking. The radio signal is usually sufficiently strong at these closer ranges and most environments have enough objects and walls present to help the signal reflect around in every direction to allow for worry free operation.

When using your system indoors, you can usually get away with placing more obstacles between the units as the radio signal tends to "reflect" around the inside of a building. The signal will generally reflect from anything metallic such as structures and wiring inside walls of buildings. This "reflected" signal will tend to wrap around groups of people, walls, and down hallways.

You may however occasionally notice signal is lost or your slave flash fails to operate reliably in situations where the transmitter antenna is not pointed upright depending on your shooting environment and depending on the placement of your slave flashes. Sometimes in vertical picture taking or with the master flash head pointed upward, the transmitter radio signal must go through your camera or your body to reach the slave which may reduce range. This generally happens in large open spaces or when the slaves are placed a greater distance from the master.

When using your system outdoors, some care must be taken in the placement of slave flashes. The radio signal is impeded by dense materials such as concrete, masonry, brick, tile, etc., as well as objects with lots of water - such as planters, dense brush, large trees, and groups of people.

It is usually possible to activate your slave flashes through windows and exterior walls with reduced range. Some exterior walls may be too dense to allow a clean transmission of the radio signal, and many windows are treated with metallic films which may reduce or block the radio signal.

In many cases, using the optional Dipole antenna on your receiver will help increase reliability in the above situations by making the PX Receiver more sensitive to the radio signal.

Radio Interference

Your PX Transmitter uses a frequency not used by many other devices (it is safely outside the band of 900mhz cordless phones and cell phones for example). However, most environments do have a certain amount of background radio interference - usually emitted by other electrical devices present in the environment. ALL electric devices emit some radio signals on certain frequencies. You may encounter various types of radio interference in the operation of your PX System depending on your shooting environments. Recognizing and avoiding interference will help minimize the disruption to your picture taking and maximize the usefulness of your PX system.

RadioPopper PX Radio Wireless System

Identifying Radio Interference

When a clean link is established between a PX Transmitter and a PX Receiver, the PX Receiver will turn on the orange Link LED. Any time this signal is lost, interrupted, or other unexpected signals cause a conflict with the signal the receiver is expecting to see - the Link LED will go out. The Link LED will turn back on as soon as the PX Receiver is able to make out the correct signal through the "noise" of the interfering signal.

In the presence of interference you may observe the Link LED on the PX Receiver is not solid - it may be flickering or strobing, even when in close range of the PX Transmitter. In this condition, you may have intermittent interruption in the operation of your PX system.

You may also observe erratic operation of your slave flash. Any conflicting background signal is reproduced as short blinks of the light source inside your PX Receiver, which are seen by the sensor of your slave flash. In most cases, these erratic blinks don't match any timing your slave flash is programmed to respond to so they are disregarded. In some cases, the random timing of these blinks may exactly match an instruction your slave is programmed to. In this case it may emit short pops of light or perform other erratic behavior.

Once you have identified an issue of interference, repositioning the slave flashes may correct the problem. In many cases, your PX system will still operate in the presense of interference to a satisfactory level as to allow continued use without changing location. In other cases moving just a few feet may be enough to get away from the interference.

Sources of Intentional Radio Signals

Some electronics intentionally emit radio signals. Your PX Transmitter uses the United States certified "Industrial, Scientific, and Medical" or "ISM" band as that is the only band the FCC will allow the type of broadcast required to make this system possible. This band is quite wide with lots of frequencies available so other devices with the exact frequency as your PX should be rare, but you may occasionally shoot at locations with conflicting radio signals.

Common sources are monitoring and environmental control equipment - such as security systems and air conditioning and heating control systems. These systems may emit a strong signal and may conflict with your PX system as far as 200 ft. away from the emitting source. Some locations may have many such transmitters throughout the property which may prevent reliable operation anywhere at the venue. The good news is these more powerful sources of interference are very rare and not likely to reduce the usefulness of your PX system at multiple locations.

Sources of Unintentional Radio Signals

All electrical devices emit radio signals. These signals are usually very low power and won't interfere with other electronics. As electric devices age and begin to fail, they often begin emitting various interference. Your PX Receiver is tuned to be exceptionally sensitive to changes in radio frequency which allow it to repeat the signal between your flashes at such an incredibly fast speed. This does also make them sensitive to certain background radio interference.

Sources of unintentional radio signals are fairly common. The most common source of signals likely to effect your PX Receiver are failing fluorescent lights (lights operating normally pose no concern of interference), and failing computer and TV monitors. Though this type of interference is fairly common, these signals usually have very short range, and moving your shooting location just a few feet may be enough to get you away from the interference.

Trouble Shooting

About This Section

We have put much consideration into the design and operation of the PX system. We are confident you will experience simple and worry free operation. Please refer to this section if you do experience any trouble while operating your PX's. This section is split into three segments focused on the types of mis-fire or malfunction issues you are likely to encounter.

How ETTL and iTTL Work

As the RadioPopper system is simply a "relay" for an existing signal being sent between your Master and Slave flashes, it is important to understand how the existing system works. Some of the misfire events or malfunctions you may experience are directly attributable to the underlying ETTL / iTTL system built into the flashes themselves, rather than the PX radio system.

Your ETTL / 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 in your camera's display. It may appear your flash is "firing", but you don't see any flash in your exposed image. 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: If you are using high speed sync, please refer ahead to the High Speed Sync note on Page 29.

NOTE: This type of mis-fire will only happen if you are actually using the ETTL 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 regarding features for remotely setting the power level of slave flashes.

1. If you're getting a lot of these misfires (anything 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 ETTL and iTTL systems *without* the PX System installed, we've found a certain misfire rate 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 situations, a certain number of mis-fires will occur purely attributable to inconsistencies in the Master and Slave flash system itself.

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As the RadioPopper PX system simply repeats the signal with a high degree of accuracy, these mis-fires attributable solely to the flash system itself will still happen and are not an indication of malfunction of your PX system.

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 try it - 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, reliability will be reduced. 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 probably also have 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 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 we've tried 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 **www.mahaenergy.com**.

5. Sometimes a Slave flash may get confused and stop responding correctly. No kidding. This happens without the PX 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 PX system.

This "getting confused" seems to have more to do with the Slave flash than the PX 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 ETTL channel on your flashes. This sounds strange, but even before the RadioPopper system came along, many photographers have found greater reliability on certain ETTL channels. If you're using a SpeedLite 550EX as your master, set it to ETTL channel 4, or 3 as an alternate as it won't work on ETTL channels 1 or 2.

7. Check your batteries. All of them. There is no "auto cut off" when the batteries in your PX Transmitter and PX Receivers start to die. You will start seeing increased numbers of mis-fires when either unit begins to run low. As the drain is

Trouble Shooting

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, or buildings between PX units, you will at some point notice an increase in the number of mis-fires.

9. Some mis-fires are unavoidable. Unfortunately, the flash manufacturers chose to time the visual pulses of light extremely close together. Due to the extreme speed at which the PX system must operate, there is no time error checking or repeating of the radio signal as with other radio based flash triggering products. The PX system reads these pulses of light and does it's best to relay them accurately and generally does a very good job of it.

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 PX system) or a problem with system installation.

1. Uncover the infrared sensor on your Slave flash (if you've used tape to attach the PX Receiver optic). Power off the PX 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 PX System as the PX is simply repeating the visible signal.

See the owner's manual that came with your flash and camera body to ensure you've configured your existing hardware correctly. Check that the the flash on the hot-shoe is set to "Master" and the remote flash is set to "Slave". Also ensure the Master and Slave units are set to the same ETTL channels.

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

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

If the Link LED is lit on your PX Transmitter, but the Link LED does not light on your PX Receiver(s), the receiver(s) may be out of range, there may exist some background radio interference in your environment preventing a good link (including another PX 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 PX Receiver), tap the Link Button on the PX Transmitter one time quickly. This should cause the Link LED on the PX Transmitter to strobe. It will also send a test message to all active PX Receivers. If this message is received correctly, the receiver(s) will blink both LED's together several times.

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

NOTE: Near the edge of the effective radio range for your particular environment, it is possible the Link LED may remain lit and test broadcasts produce the expected feedback while still your slave flash fails to activate. Near the edge of the radio range, some of the "blinks" of light transmitted by the PX system may be dropped and not correctly reproduced resulting in failures to fire.

4. Install your PX 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 PX Transmitter should strobe briefly following the shot. This indicates the magnetic sensor on the PX 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 PX Transmitter does not strobe when shooting, re-check your installation and that the batteries in your PX Transmitter are good, as well as checking the batteries in your IR Commander.

Slightly adjust the placement of the PX Transmitter on top of your Maser device. The magnetic sensor 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.

Even if the Link LED on the PX 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.

5. Check the placement of the nylon bead at the end of the optic tube on the PX Receiver. It may have slipped loose during use. We recommend securing the bead over the IR sensor of your slave flash with a square of gaffer's tape. Your local camera dealer should stock new formulas of gaffer's tape that won't leave residue or marks on your flash.

Ensure the bead 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 2-4** (Pg. 15) in this manual.

6. Check the optic is inserted into the sleeve on the side of the PX Receiver.

7. Make sure there is no excessive bend in the optic tube extending away from the PX Receiver. A bend any tighter than what would wrap around your finger should be avoided. An excessively tight bend radius will prevent light from efficiently traveling down the length of the optic tube and may result in reduced reliability.

Trouble Shooting other Miscellaneous Issues

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 and only has an effective range (between the flash and the subject being lit by the flash) of a few feet. 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.

One of my PX's has become non-responsive
You may observe a PX 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. Rechargeable batteries 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.

RadioPopper PX Radio Wireless System

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Limited Warranty

LIMITED WARRANTY

The Limited Warranty set forth below is given by Leap Devices LLC (hereafter "Leap") in the United States with respect to the RadioPopper PX Transmitter and / or RadioPopper PX Receiver packaged with this Limited Warranty and identified by model number within this Limited Warranty (each a "Product") when purchased and used in the United States or in Canada.

This Limited Warranty is only effective upon presentation of this warranty card and proof of purchase.

A Product, when delivered to you in new condition in its original container at the point of it's initial retail sale, is warranted against defects in materials or workmanship as follows: for a period of one (1) year from the date of original purchase, defective parts or a defective Product returned to Leap or its authorized service providers, and proven to be defective upon inspection, will be repaired with new or comparable rebuilt parts or exchanged for a refurbished Product, as determined by Leap or the authorized service provider, in their sole discretion. Replaced parts and exchanged Products will become the property of Leap.

When returning a Product for warranty service, the shipping charges must be prepaid and the Product should be shipped in its original container, or an equivalent, properly packaged container to withstand the hazards of shipment and fully insured. A copy of this warranty card and proof of purchase should be enclosed, as well as a description of the problem. Repairs will be made and the Product will be returned, shipped at NO CHARGE, within the country of repair. The Product must be received for warranty service by Leap before the expiration of this Limited Warranty.

This warranty only covers defective materials or workmanship encountered in normal use and service of a Product and does not apply in the following cases:

(a) If a circuit board is removed from the plastic enclosure for any reason or if the original factory glue seal between the circuit board and plastic enclosure is disturbed in any way. Tampering with or removing the circuit board from the enclosure VOIDs this warranty.

(b) Loss or damage due to neglect and/or abuse causing deterioration, mishandling, accident or failure to follow operating instructions including but not limited to operation of a PX Transmitter with no antenna attached, or operation with an antenna other than that provided with the product originally, or inserting the batteries backward for any length of time.

(c) If a Product is defective as a result of leaking batteries or damage due to water or other liquid, or any environmental conditions.

(d) Defective materials or workmanship where the defect is due to a Product having been serviced or modified by other than Leap or a Leap authorized service provider.

(e) Malfunction resulting from the use of accessories, attachments, supplies, parts or devices (including, without limitation, batteries) that do not conform to Leap specifications.

(f) Damage resulting during shipment. (Claim must be presented to and examined by the shipper).

(g) Damage or service resulting from modifications or alternations to a Product in any way (including any alteration or removal if its serial number or identification marks).

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