Nikon D1 Radio User Instructions
DRAFT 11/15/2001

Table of Contents:

The PocketWizard System of Radio Controls

Photographers can enjoy wireless connectivity to their professional flash and camera equipment using a variety of different models of the PocketWizard radio controls made by LPA Design. The first generation of PocketWizard called the "Classic" had 16 channels and was meant to be mounted to the photographers shirt pocket with a cord connecting it to the camera. The PocketWizards revolutionized the wireless flash connectivity industry with reliability and range that no other brand of radio could achieve.
The next generation of PocketWizards has two versions: The PLUS and the MAX.
The PLUS is a 4 channel radio with great range and now is mounted to the camera using a the hot shoe (top of camera) rather than sitting in a shirt pocket. The MAX is a 32 channel radio that has 4 (quad) zone selective flash control and many other new features.
The software to the MAX was eventually given an upgrade and the new MultiMAX radio was born. The MultiMAX was a full two way transceiver that the user could select to transmit or receive with the flip of a switch, but it still mounted in the camera shoe.

PocketWizard Inside - "The Next Generation":
The newest generation of PocketWizard products take this evolution to the ultimate step.
It puts the radio inside the camera as a very small module with no external device needed. This leaves the shoe open for an on camera flash. LPA Design with the help of Mamiya America and many other partner companies have teamed together to bring about *"Digital Wireless Freedom"*. This new system of compatible radios and built in modules will all work together to make wireless photographic controls a standard in the industry.
The antenna for this radio system plugs into the front PC connector on the camera.
The radio can intelligently detect if a regular PC cable is attached, or if an antenna is attached. The radio is only activated if it sees an antenna connected.

D1 - PocketWizard Compatibility Mode

The Nikon D1, D1X or D1H radio module inside your camera is compatible with all 32 PocketWizard channels.
To activate the camera's radio, you will need to plug in the antenna into the front PC sync port of the camera. The power on default is for the radio to come up in PocketWizard mode.

Channel selection: firing remote flash packs.
The user can change the channel of operation by first setting up a remote receiver on the channel they wish to use for triggering the flash.
Steps-
1) Turn receiver on and select channel.
If using a MultiMAX, make sure it is set to receive mode.

2) While camera is on, press and hold the "Flash" button on top of camera.
It's the button next to the "BKT" button.

3) Spin the front command dial (just below the trigger button) up or down while holding the "Flash" button to change the channel up and down.   When you spin the dial and the remote flash suddenly pops, you have just hit the channel that the receiver is on. If you go below channel 1 it will wrap around to channel 32.
If you go above channel 32, it will wrap around back to channel 1.

4) To confirm you're still on the correct channel, press and release again the "Flash" button.
If the flash fires, than you're on the correct channel and can start shooting. If the flash does not fire, you might have gone past the channel. If it does not flash when you tap the "Flash" button, go back to step 3.

The camera will remember the transmit channel once it is set, even if the batteries are removed. When you power the camera up the next time it will be on the last channel you have selected.

Channel selection: remotely firing the camera.
The radio is in receiver mode most of the time.
The receive channel is always linked one channel up from the transmit channel.
If you set the cameras transmit channel to channel 5, the camera will receive remote triggers on channel 6.
The only exception to this is for channel 32. If the transmit channel is set to 32, then the receive channel will be channel 1.
The best way to set the receive channel is to know what channel you set for transmit and add 1.

An alternative way to set the receive channel is as follows-
1) Turn on a PocketWizard transmitter and select a channel.
2) Press and hold the transmitters TEST button so that it keeps transmitting.
3) Press and hold the "Flash" button on the camera and spin the front command dial up or down.
4) Let go of the "Flash" button on the camera and see if the camera triggers.
If the camera does not trigger, you are not on the correct channel yet.
Repeat step 3 until the camera fires.

This method is much slower than setting a transmit channel (see previous section), but is a way to set the channel if you do not have a PocketWizard receiver.

Remote camera and flash Relay mode:

The radio can automatically switch between transmit and receive modes.
If the camera receives a remote radio trigger signal, it will automatically switch to transmit mode and wait for the flash sync signal from the shutter. When it sees this signal it will transmit the trigger command to a remote receiver to fire the flash and then automatically switch back to receive mode to wait for the next remote trigger.

So to set up this system, you need two PocketWizards.   One PocketWizard receiver for the flash and one transmitter for you to hold in you hand to fire the camera.

Set the camera's transmit channel so that it can fire the flash. You can check if this is set correctly by pressing the "Flash" button on top of the camera.

Next, you set the PocketWizard transmitter that you will be using to fire the camera to be one channel UP from the channel your flash receiver is set to.
So if your flash receiver is on channel 17, you must have the transmitter in your hand set to channel 18.
If you set them both to the same channel, the system will not work properly!

Prerelease Lock:

The radio module adds one more important feature to the camera.
Locking the prerelease enables the camera to stay awake (ready to fire). The camera can fire in 75ms (0.075 sec.) If it is kept awake. If the camera goes to sleep / standby mode, the response time for it to wake back up again can be up to 1 sec. depending on the memory card used.

To activate the Prerelease lock, press and hold the "Flash" button and then at the same time, press the top trigger button half way down.
Let go of the two buttons and the camera should now stay awake continuously.
The batteries will run down much faster. Typically you will only get 90 to 120 minutes of use from a battery charge while in this mode, so keep a few extra batteries with you.

To deactivate the Prerelease lock, you will need to turn the camera off and back on again.

The FlashWizard II System of Radios

LPA Design recognized a need by Sports Photographers many years ago for a system of radios that would enable photographers to capture many images form a number of different locations and angles using a single flash of light.

To capture multiple images from a single flash of light, you need to control the time that the shutters open very accurately.   The FlashWizard II radio measures the delay time from when your camera is triggered to the time then your shutter outputs a sync pulse.

If it detects that there is a difference in time between other cameras used on the system, it will automatically add or subtract the right amount of delay to make sure the camera's shutter opens at the same time as all the other cameras.

The FlashWizard II option for your radio enables your camera's shutter to be precisely controlled. The D1 family of cameras (D1, D1X, D1H) all have a shutter lag time variation of up to 10ms. This is to much variation to enable synchronization with other cameras.

By adding a special control component and software to the radio (FlashWizard II option), your radio module is able to make the camera's lag variation less than 1.2ms. That's a factor of 8 times more accurate!

Your D1 camera with FlashWizard II software will be able to take photos at the same time using the same flash packs as you are using to fire Medium Format, 35mm, and other film type cameras.

Using the Radio In FlashWizard II Mode:

To activate FlashWizard II mode, you will need to do the follow steps -

1) Turn the camera off.
2) Press and hold the top camera trigger button
3) Turn the camera power switch back to the ON position while still holding in the trigger
4) Let go of the trigger button

You are now in FlashWizard II compatible mode.

When ever you turn on the camera, the mode will be determined by if the trigger is held or not.

IMPORTANT: If you change batteries or turn the unit off, you WILL need to follow the steps above to keep FlashWizard II mode active. The mode is NOT saved in memory.

Once FlashWizard II mode is active, the unit will automatically have the Prerelease lock turned on.

Since the camera does not have the same user interface (keypad) as a FlashWizard II, the radio needs to work by way of a "Learn" mode.
It learns what it needs for configuration from another FlashWizard II radio.

FlashWizard II Mode Configuration:
Follow the procedure below to set up your D1 camera as a FlashWizard II.

1) Turn on a FlashWizard II radio and set that radio (external radio) with all the settings you want the internal D1 camera radio to have. Set the System number, Unit number and Location.
2) Turn the camera on in FlashWizard II mode.
3) Press and hold the "Flash" button on the camera.
4) On the FlashWizard II keypad, press SHIFT-SLEEP (SHIFT-3).
5) Press 1 for "Wake Up"
6) Press 3 for "Remote"
7) Type in the Unit number you want the Camera to become (Learn).
8) Press "ENTER"

When the camera sees the "wake up" command, it will query the sending FlashWizard II for it's full information including the location.

The Camera radio uses a fixed 110.0ms "Equalize to time". This means that if you are going to use the D1 cameras for use with the FlashWizard II system, you will need to set your Equalize time on all FlashWizard II units to be 110.0ms.

FlashWizard II Mode (Continued):
The "Flash" button on the camera can be pressed to test fire the FlashWizard II Strobe unit.
This will confirm to you that the camera is set to the correct system number.
To fully verify all the information learned by the camera, use a FlashWizard II unit to scan for remotes.
Important:
Before you scan, make sure you set the FlashWizard II unit used to teach the camera to another unit number or turn it off!
The camera should show up in the scan under the ID you had just selected.
If the camera does not show up in a scan, make sure that no other FlashWizard II is on the same unit number.
If it still does not show up, repeat the FlashWizard II Mode Configuration steps in the previous section.

Using the Camera as the FlashWizard II System trigger:
Your D1 camera can be used to fire a specific group of cameras, or can be set to fire nothing.
If you wish to fire a group of cameras from your D1 camera radio, you will need to configure FlashWizard II unit #1 for a special setting.

1) Turn on unit number # 1 (Master unit)
2) Press "Trig Setup"
3) Press 3 for "RF"
4) When the display on the FlashWizard says "RF 1: OFF", press either A, B, C, or D.
The A-D group you just selected will be the group that will fire when the top camera button is pressed.
5) Press "ENTER" until you are back to the main FlashWizard II screen.
6) If you have not already configured the camera groups, you will need to do so now.
Make sure the D1 camera is turned on so that it can be included in the group settings.
7) After the group selections are made, test the system trigger by pressing the top trigger button on the camera.

Important Camera Operational Notes:
Camera bottom trigger button- The trigger button on the bottom of the camera can ONLY be used to fire this camera with the flash. It can't be used to fire a group of cameras.

Camera top trigger button- Unless the camera is configured as the System trigger, the top trigger button on the camera WILL NOT fire the camera. This is to make sure a remote drone user or fan in the stands does not fire the camera or system.

When the Prerelease lock is active, the camera will not let you preview more than the last image.
To use the back thumb control buttons to review all the photos, you will need to power the camera off and back on in Normal (PocketWizard) mode.
When you are done with reviewing the photos, you will need to remember to set the camera back into the FlashWizard II mode!

Lag Time Control and Shutter Speeds:
A D1 camera with the FlashWizard II software and hardware built in will have timing accuracy from shot to shot of 1.2ms.   To achieve this accuracy the camera must first be test fired a few times so that the camera can make self adjusting corrections to it's lag time.
It takes 2 or 3 shots before the adjustments are complete.
If you are using the camera at 1/500 sec. (Maximum shutter speed) you might miss up to three photos after a battery change, or after a very long period of being awake without any triggers.

If you are using the camera though out a game, it should stay very consistent.
If you adjust the camera, but then let it sit for an hour while awake before triggering it again, you are likely to miss a few shots until it is re-adjusted to the battery levels again.

The pre-adjusting of the lag time is usually not needed if you use 1/250 second or slower.

If you do not wish to have the top trigger button on the camera fire multiple cameras, but do want it to fire this camera, you can configure the group settings on FlashWizard II unit #1 to have group D (for example) only have this one camera and the Strobe unit in the group.
This would enable you to fire the camera and get it's lag time adjusted without firing any other units.
Alternatively you can fire this camera and get it's lag adjusted by using a FlashWizard II in Monitor mode. To do this, move the cursor on the monitor unit over the unit number of the camera and press SHIFT-ENTER.
This will test fire just the camera however it will not fire the flash.
Since all you are doing is getting the camera adjusted the flash is not needed.

The FCC wants you to know...

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1. Reorient or relocate the receiving antenna.
2 Increase the separation between the equipment and receiver.
3. Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules and also with RSS-210 of Industry & Science Canada. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

FCC ID Number KDS-ND1-PWTRX-1

D1 Radio Specifications:

Modes of Operation: Two - PocketWizard mode and optional FlashWizard II mode
Radio Channels:
        PocketWizard: 32 channels (344 - 354MHz)
        FlashWizard: 64 System ID's (all on 360.0MHz)

Line of Sight Range: 1,000 feet (300meters) in open field

Transmit power: -5dBm typical

Receiver Sensitivity: -93dBm for 12dB S/N ratio (typical)

Batteries: Uses the camera's rechargeable battery

Size: Totally internal to camera (2.25" x 0.8" x 0.12")

Weight: 0.16 oz.

Shutter Sync limits:
        PocketWizard: 1/400 sec.
        FlashWizard II: 1/500 sec.

Sync Time: 1.4ms or less from start of exposure to receiver triggering flash.

Antenna: Rubber covered flexible coiled spring.
        Length: < 3inches
        Mounting: attaches to front PC connector of camera body.