



Congratulations on your purchase of the PocketWizard MiniTT1® / FlexTT5® Wireless Photo Control System for Canon or Nikon DSLR cameras and flashes. You can use the MiniTT1 Transmitter and FlexTT5 Transceiver to control single or multiple off-camera electronic or intelligent TTL flashes. The PocketWizard ControlTL® System takes the complex TTL data being sent through the camera's hot shoe and digitally interprets and transmits it as a reliable radio signal. You can now place TTL or manual flashes anywhere to illuminate the scene: Around corners, out-of-sight and in bright sunlight. The MiniTT1 and FlexTT5 are compatible with any PocketWizard radio for triggering manual flash or remote cameras.

The Canon-specific MiniTT1 and FlexTT5 radios work within the Canon E-TTL II system.

The Nikon-specific MiniTT1 and FlexTT5 radios work within the Nikon i-TTL / CLS system.

All references to TTL are exclusively for the electronic or intelligent TTL systems specific to Canon (E-TTL II) and Nikon (i-TTL / CLS), and not film TTL.

The terms Speedlite or Speedlight are used interchangeably throughout this wiki.

This wiki contains the latest information about the operation of your radios. If you would like to download a PDF of this information, [click here](#) and follow the instructions.

Operation

Quick Navigation
Getting Started
MiniTT1 and FlexTT5 Key Features
Safety Warnings
Nikon Compatibility
Canon Compatibility

Batteries
PocketWizard Utility
Basic Wireless TTL
Advanced Wireless TTL
Manual Flash
PowerTracking
HyperSync
High Speed Sync
Channels
Learn Mode
Remote Camera Triggering
Factory Reset
Status LED
Mounting
Long Range Performance
MiniTT1 and FlexTT5 Specifications
FCC Notice

To quickly begin using your radio, you might be interested in the Quick Guides or other documentation at [PocketWizard.com](#).

For more detailed information, use the links below to hone in on the specific feature you are looking for. The links are the section headings. For example, the words **Getting Started** below will take you straight to that section.

[Getting Started](#)

Information you should know before using your radios. Also referred to as "READ ME FIRST" information.

[Key Features](#)

Learn more about the key features of your MiniTT1 and FlexTT5. Additional information on features can also be found at [PocketWizard.com](#)

[MiniTT1 and FlexTT5 FAQ](#)

Having trouble with your MiniTT1 or FlexTT5? Check out our [MiniTT1 and FlexTT5 FAQ](#) page!

[Safety Warnings](#)

Information about operating the radios safely can be found here.

[Nikon Compatibility](#)

Find out exactly what cameras and flashes work with the Nikon-Specific ControlTL radios, and what specific operational considerations are required for your gear.

[Canon Compatibility](#)

Find out exactly what cameras and flashes work with the Canon-specific ControlTL radios, and what specific operational considerations are required for your gear.

[Batteries](#)

Battery types, polarity, and life expectancy information.

[PocketWizard Utility](#)

Connect your radios to your computer via USB and control many aspects of them via the PocketWizard Utility.

[Basic Wireless TTL](#)

Simple TTL operation instructions. Use all of your Speedlites as one zone of light with the camera making the exposure decision.

[Advanced Wireless TTL](#)

Advanced i-TTL operation instructions. Control individual zones of light. Control your remote Speedlights manually from the camera position.

[Manual Flash](#)

Trigger any remote flash simply.

PowerTracking

Trigger a compatible remote studio flash and control its power level directly from the camera position.

HyperSync

Learn more about increasing your X-Sync speed using HyperSync.

High Speed Sync / Auto FP

Use your Speedlites with your camera's fastest shutter speeds. See [Understanding HyperSync and High Speed Sync](#).

Channels

Channels allow you to work collaboratively with other photographers, or to work with your radios exclusively.

Learn Mode

Learn Mode is not required for normal operation of your radios, but if you are working away from the PocketWizard Utility and in conflict with another photographer on your channel, Learn Mode allows you to change channels in the field.

Remote Camera Triggering

In addition to triggering remote flash, your PocketWizard radios can trigger a remote camera's motor drive port. Relay Mode is covered in this section.

Factory Reset

Sometimes you just need the settings in your radio to be like they were when you first took them out of the box.

Status LED

This section covers the various colors and blink patterns used by the Status LED.

Mounting

Radios perform best when mounted properly.

Long Range Performance

Optimize range using these techniques.

MiniTT1 and FlexTT5 Specifications

Details on radio specifics are found here.

FCC Notice

The FCC wants you to know...

There is currently no text in this page. You can [search for this page title](#) in other pages, or [search the related logs](#), but you do not have permission to create this page.

1. Download the PocketWizard Utility

Windows

1. Download the [PocketWizard Utility Version 1.58 Installer for Windows](#)
2. Save the installer to the directory of your choice (usually the Downloads folder)
3. Run the Installer and follow the installation instructions
4. The PocketWizard Utility is now installed in your Start Menu

Mac

1. Download the appropriate PocketWizard Utility for your Mac:
 - [PocketWizard Utility Version 1.58 for Intel Mac \(all Macs newer than 2006\)](#)
 - [PocketWizard Utility Version 1.54 for PowerPC Mac \(older Macs - 2006 or earlier\)](#)
2. Save the Disk Image file (.dmg) to the directory of your choice (usually the Downloads folder)
3. Open the downloaded .dmg file
4. Run the PocketWizard installer package within the Disk Image, and follow the installation prompts
5. The PocketWizard Utility is now installed in your Applications folder.

Mac OS X El Capitan Note

At this moment, our PocketWizard Utility appears to be incompatible with Mac OS X El Capitan. Something has changed in how they handle USB devices. We're looking into it. In the meantime, you'll either have to refrain from updating to El Capitan to work with the PocketWizard Utility, or find another machine to use it on. We're not the only ones experiencing issues:

- [Lightroom and El Capitan](#)
- [Issues occur when running Steinberg products under OS X 10.11](#)
- [OS X 10.11 El Capitan Third Party Product Compatibility Information](#)

Their new System Integrity Protection shifts how things work. It impacts some simple connectivity stuff we've relied upon. We are researching solutions now:

- [System Integrity Protection - Adding another layer to Apple's security model](#)

2. Check for Updates

MiniTT1, FlexTT5, PowerST4, and PowerMC2

1. Launch the PocketWizard Utility
2. Connect your radio to your computer via a Mini-B USB cable
3. The connected radio will be displayed in the top left of the Utility window.
4. Note the current Firmware Version of the connected radio. If the Firmware Version matches the Current Versions listed below, skip steps 5 to 9 and proceed to the next radio.
5. Under the Update Tab, click "Check for Updates", which will download the latest firmware version, and prompt to update the firmware in the connected radio.
6. The Utility will update the firmware in the connected radio. Do not disconnect the radio while the progress bars are visible.
7. After the Utility confirms a successful firmware update, disconnect the radio from your computer.
8. Perform a Factory Reset of your radio, by holding TEST as you power on the radio for 10 seconds, until you see 4 green blinks in a row. [Click here to view a video of this reset process](#)
9. Repeat the above steps for all of your radios, making sure all firmware versions match the Current Versions listed below.

Plus III

1. Launch the PocketWizard Utility
2. Connect your radio to your computer via a Mini-B USB cable
3. The connected radio will be displayed in the

- top left of the Utility window.
- Note the current Firmware Version of the connected radio. If the Firmware Version matches the Current Versions listed below, skip steps X to X and proceed to the next radio.
 - Under the Update Tab, click Check for Updates, which will download the latest firmware version, and prompt to update the firmware in the connected radio.
 - The Utility will update the firmware in the connected radio. Do not disconnect the radio while the progress bars are visible.
 - After the Utility confirms a successful firmware update, disconnect the radio from your computer, and move the power switch off.
 - Perform a Factory Reset of your radio, by holding the TEST button as you power on the radio.
 - Repeat the above steps for all of your radios, making sure all firmware versions match the Current Versions listed below.

MultiMAX

- Launch the PocketWizard Utility
- Enable USB Mode on the MultiMAX:
 - Turn off the MultiMAX
 - Hold the Backlight button (between TEST and MENU), and connect the Mini-B USB cable to your computer
 - Continue to hold the Backlight button, and move the power switch to Transmit
 - Release the Backlight button
- The connected radio will be displayed in the top left of the Utility window.
- Note the current Firmware Version of the connected radio. If the Firmware Version matches the Current Versions listed below, skip steps X to X and proceed to the next radio.
- Under the Update Tab, click Check for Updates, which will download the latest firmware version, and prompt to update the firmware in the connected radio.
- The Utility will update the firmware in the connected radio. Do not disconnect the radio while the progress bars are visible.
- After the Utility confirms a successful firmware update, disconnect the radio from your computer, and move the power switch off.
- Perform a Factory Reset of your radio, by

- holding the C key as you power on the radio.
- Repeat the above steps for all of your radios, making sure all firmware versions match the Current Versions listed below.

Current Firmware Versions

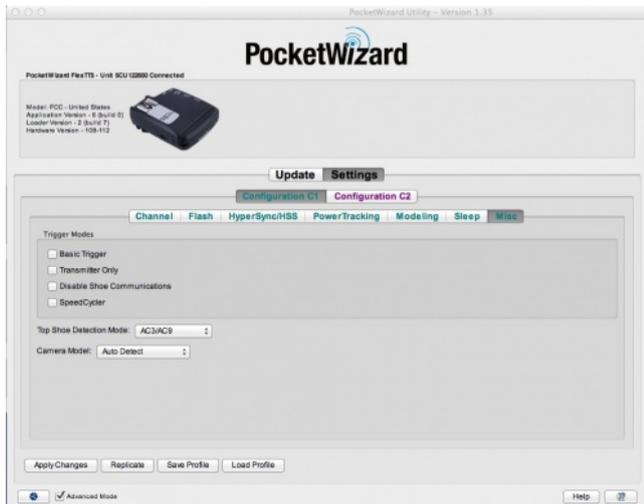
Radio	Firmware Version	Release Date	Release Notes
MiniTT1 / FlexTT5 Canon	6.800	2/20/2015	Release Notes
MiniTT1 / FlexTT5 Nikon	3.800	2/20/2015	Release Notes
PowerMC2	2.402/3 (FCC/CE)	6/11/2013	Release Notes
PowerST4	5.400	6/11/2013	Release Notes
Plus III	1.200	6/11/2013	Release Notes
MultiMAX	7.53		See Manual

Information about the current Beta firmware is [available here](#).

3. First Time Setup

MiniTT1 & FlexTT5 - Canon

- For the radio that will be used as the transmitter attached to your camera, change the Camera Model setting to match the camera the radio will be attached to for Configuration C1. This setting is located under the Misc tab when your radio is connected to the PocketWizard Utility. Make sure to Apply Changes in the bottom left of the Utility window after applying this setting. Once the radio has briefly disappeared and reappeared in the Utility window (which confirms the settings have been applied to the radio), you can disconnect the USB cable.



This step is only required once, or when the camera model changes.

2. Turn everything **off** and install **fresh batteries**
3. **Set up** your remotes:
 1. Slide your Speedlite onto a FlexTT5 and **lock it** down
 2. Turn the Speedlite on, and set it to **ETTL** - don't use "Master" or "Slave"
 3. Turn the FlexTT5 on to **C.1** - a low power flash confirms it's ready
4. Slide your MiniTT1 or FlexTT5 onto your camera and turn it on to **C.1**
5. Turn on the camera, set the shutter speed to **1/160th**, and shoot a **calibration shot** to prime the radios - the remote Speedlite won't fire
6. **Start shooting** TTL pictures!

You're all set!

This is [Basic Wireless TTL](#). Adjust your camera's Flash Exposure Compensation to change the power level of your Speedlite. You can't adjust power levels using the camera's [Flash control] menu settings, but there are easier and more powerful options:

Next recommended reading: [MiniTT1 and FlexTT5](#)

- [The AC3 Zonecontroller](#)
- [A Canon Master Speedlite](#)

MiniTT1 & FlexTT5 - Nikon

1. Set your camera to use Auto-FP. On most Nikon Cameras, this is Custom Function e1, located under the Pencil menu. This setting

should be set to the slowest shutter speed with the "(Auto FP)" option. Most Nikon cameras will use "1/250 (Auto FP)", although some will be 1/200 (Auto FP)".

2. Connect your receiving flashes to their respective FlexTT5's. Turn the flash on, and set it to the normal TTL mode - NOT "Master" or "Slave" mode. Then, turn the FlexTT5 on to Configuration C1. Within a few seconds, a low power flash will be emitted from the directly-connected flash, confirming the flash and FlexTT5 are communicating through the hotshoe properly.
3. Connect the transmitting MiniTT1 or FlexTT5 to your camera. Turn the radio on to Configuration C1.
4. Turn on the camera, and set to 1/160th shutter speed. Take a test shot with the camera at this shutter speed - the remote flash will fire, but may not sync properly (this is a Calibration Shot for the radio). Take a second test shot, and your remote flashes will fire a TTL exposure!

Step 1 is only required once, or when you set up a new camera. The normal power-up sequence is Steps 2-4.

These steps are for basic TTL operation. Using an AC3? [Continue Here](#) Using a Master Nikon flash? [Continue Here](#)

PowerST4

1. Connect your PowerST4 to your remote Elinchrom Flash, and power on the flash unit. The radio will power on when the flash is turned on.
2. Follow the above instructions for starting up a Canon or Nikon transmitting radio.
3. You will now be triggering your PowerST4! Use the in-camera Flash Exposure Compensation settings to adjust the power levels.

You can also use your AC3 or Canon / Nikon master flash controls to adjust the manual power level of the connected flash. See the respective links above.

PowerMC2

1. Connect your PowerMC2 to your remote Einstein flash, and power on the flash unit. The radio will power on when the flash is turned on.
2. Use the Einstein's LCD to change the Channel and Zone settings to channel: "CTL-01" and "Zone A"
3. Follow the above instructions for starting up a Canon or Nikon transmitting radio.
4. You will now be triggering your PowerMC2! Use the in-camera Flash Exposure Compensation settings to adjust the power levels.

You can also use your AC3 or Canon / Nikon master flash controls to adjust the manual power level of the connected flash. See the respective links above.

Plus III & MultiMAX

1. With all equipment powered off, connect your remote radio to the camera or flash you'd like to trigger (with appropriate [cable](#))
2. Connect your transmitting radio to the hotshoe of your camera (or for a remote camera, simply have the radio in your hand)
3. Power on the remote radio, the remote flash, and the transmitting radio.
4. Ensure the Plus III's are set to TxRx mode, or for a MultiMAX that the transmitting radio is set to Transmit, and the receiver to Receive mode.
5. Set the Channels and Zones to match.
6. Take a test shot, or press the TEST button, and the remote unit will fire!

4. Further Reading

For more information about specific topics, continue reading here:

[Channels](#)

[HyperSync](#)

And for more radio-specific information, start here:

[Plus III FAQ](#)

[PlusX FAQ](#)

[MultiMAX FAQ](#)

[MiniTT1 and FlexTT5 FAQ](#)

[PowerMC2 FAQ](#)

[PowerST4 FAQ](#)

[PocketWizard Utility FAQ](#)

Next recommended reading: [Status LED](#)

Some PocketWizard radios require batteries.

Contents

- [1 Battery Chemistry](#)
- [2 FlexTT5, Canon or Nikon](#)
- [3 MiniTT1, Canon or Nikon](#)
- [4 MiniTT1 and FlexTT5 Status LED](#)
- [5 MiniTT1 and FlexTT5 Battery Meter in the PocketWizard Utility](#)
- [6 Storage](#)
- [7 Battery Warnings](#)

CAUTION

Turn OFF your equipment (PocketWizard units, electronic flash units, cameras, etc.) before making connections or changing batteries.

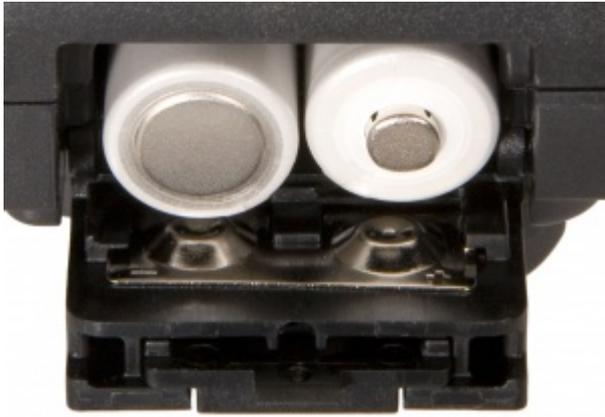
Battery Chemistry

FlexTT5s will operate reliably using just about any pair of ~1.5 volt AA batteries, regardless of the type of battery chemistry. Alkaline, lithium, nickel metal hydride, nickel cadmium, and other battery chemistries may vary somewhat in total life expectancy, but all are compatible. PocketWizard radios will report the most accurate remaining battery life using Alkaline batteries, since other chemistries have a slightly different voltage discharge curve, which is how the remaining life is measured.

Regardless of the particular battery chemistry, the MiniTT1 and FlexTT5 regulate the battery power which gives excellent performance throughout the entire life of the batteries. The unit will continue to function normally until the batteries are nearly exhausted.

The voltage regulation in our radios is very efficient. There is usually only a small benefit when using lithium (non-rechargeable) batteries. Lithium batteries are designed for the quick burst high current draw found in cameras and portable flash devices. Expect only a 10-20% longer battery life (approximate) over alkaline batteries when using lithium batteries.

FlexTT5, Canon or Nikon



Note proper polarity

Install 2 fresh AA (IEC:LR6) batteries into the FlexTT5 Transceiver. Make sure to note proper polarity.

Alkaline batteries are recommended. Rechargeable or other chemistry batteries will also work, though life expectancy may vary.

Life expectancy = approximately 60 hours with alkaline batteries.

MiniTT1, Canon or Nikon



Note proper polarity

The MiniTT1 saves batteries by automatically entering an extremely low power state when the camera enters sleep mode, or if not on a camera and TEST is not pressed for 10 seconds.

Install a fresh CR2450 coin cell battery into the MiniTT1 Transmitter. Make sure to note proper polarity. When the battery is in the radio, you should be able to see the + sign.

Life expectancy varies based on usage profile, as well as camera and flash models. When using a CR2450:

- Canon MiniTT1 = 100's of hours/thousands of triggers
- Nikon MiniTT1 = approximately 30 hours of camera awake time

[Basic Trigger](#) Mode consumes the coin cell battery more quickly and is not recommended when using the MiniTT1 for Nikon on a Nikon camera, or when using the MiniTT1 for Canon on a Canon camera.

Low temperature can significantly affect coin cell performance. Always use fresh batteries in cold temperatures. Make sure to read the [Safety Warnings](#) about temperature.

MiniTT1 and FlexTT5 Status LED

Look at the normal [Status LED](#) blink to determine battery level, or use the PocketWizard Utility.

LED Blink

1 **Green** blink = More than 50% remaining

2 **Amber** blinks = Warning - less than 50% remaining

3 **Red** blinks = Less than 25% remaining - change immediately

These battery levels are tuned for alkaline batteries in the FlexTT5 and a standard Lithium coin cell in the MiniTT1. Other battery chemistries can work, but their battery level may not be reported accurately.

Please note: The LED battery level blinks are based on the discharge curve and voltages of standard Alkaline batteries. Those are the most common and most predictable. Rechargeables have slightly different voltages, very different discharge curves, and, considering the different chemistries and aging of the batteries, are less predictable from the LED's perspective. It would be nearly impossible for us to make an LED battery level blink that accommodated all chemistries and aging of rechargeables.

You can still use your rechargeable batteries, but you need to build your own mental map of how they perform over time. If your rechargeables last 20 hours, then plan accordingly. If they blink amber when fully charged, then work with that information. If they only last a few hours when the LED blinks red, then use that information. The radios will reliably measure the voltages, but the LED colors and blinks will have different meanings for your batteries relative to alkalines.

The radios will continue to work reliably and consistently until the batteries are exhausted. They are low current draw devices, and take very little power from the batteries to operate. They will have the same range and performance when the LED is green, amber or red. At the very end of the batteries life (LED has been red for a while) they might begin to have issues depending on how well the batteries recover at low voltage, but up until that very end point they should operate identically shot to shot.

MiniTT1 and FlexTT5 Battery Meter in the PocketWizard Utility

To see your battery level in the PocketWizard Utility, make sure your MiniTT1 or FlexTT5 are turned on (set to C.1 or C.2) before you connect the USB cable. Hover your mouse cursor over the battery

icon to get an exact voltage and battery status.

Storage

For all PocketWizard products, the storage temperature range, without batteries, is above -30° C (-22° F) and below 85° C (185° F).

Always remove batteries during storage.

Battery Warnings

WARNING - To avoid battery leakage, follow these guidelines:

- Always remove the batteries when the unit is not in use for extended periods of time, or during shipping or long distance travel.
- Never mix old and new batteries. Always use a fresh pair of matched batteries.
- Always change batteries promptly at the first indication of low battery operation.
- Do not use or leave the unit in extreme temperature or humid environments.

Please pay attention to the following safety warnings:

Contents

- [1 Temperature](#)
 - [1.1 Operating Temperature](#)
 - [1.2 Storage Temperature](#)
- [2 Battery Warnings](#)
- [3 Special PowerMC2 USB Warning](#)
- [4 Other Warnings](#)

Temperature

Operating Temperature

For most PocketWizard radios, the operating temperature range is above -15° C (5° F) and below 50° C (120° F).

The Nikon MiniTT1 operating temperature range is above -12° C (10° F) and below 50° C (120° F).

Low temperature affects coin cell performance. Always use fresh batteries in cold temperatures. See the [Batteries](#) section for more information.

Storage Temperature

For all PocketWizard products the storage temperature range without batteries is above -30° C (-22° F) and below 85° C (185° F)

Always remove batteries during storage.

Battery Warnings

WARNING - To avoid battery leakage, follow these guidelines:

Always remove the batteries when the unit is not in use for extended periods of time, or during shipping or long distance travel.

Never mix old and new batteries. Always use a fresh pair of matched batteries.

Always change batteries promptly at the first indication of low battery operation.

Do not use or leave the unit in extreme temperature or humid environments.

See the [Batteries](#) section for more information.

Special PowerMC2 USB Warning

When connecting the PowerMC2 to the [PocketWizard Utility](#), make sure to disconnect the PowerMC2 from any attached flash first.

Do not connect the PowerMC2 to USB while also connected to the Einstein E640 flash. Damage to your PowerMC2, Einstein, or Computer's USB port could result.

Other Warnings

Do not remove instrument covers during operation.

Do not operate the device in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

There are no user serviceable parts inside PocketWizard products. Do not install substitute parts or perform any unauthorized modification of the instrument. Refer servicing only to qualified and authorized personnel.

Red LED's are used for dim light application and do not indicate a hazardous status.

PocketWizard products are accessory devices for cameras and flashes. Do not use these products in a manner not specified in documentation.

Next recommended reading: [Channels](#)

The Status LED indicates that the unit is powered on, and displays battery level and other special status modes.

Contents

- [1 Normal Operation](#)
- [2 Triggering](#)
- [3 Learn Mode](#)
- [4 Error Condition](#)
- [5 Reset](#)

Normal Operation

Under normal operation the LED will display a short green blink every 2 seconds. This is the normal “powered on and waiting for trigger” blink.

LED Blink

1 **Green** blink = More than 50% remaining

2 **Amber** blinks = Warning - less than 50% remaining

3 **Red** blinks = Less than 25% remaining - change immediately

FlexTT5 "Good Battery" Blink [File:Example.jpg](#)

See the [Batteries](#) section for more information.

Triggering

A pulsing red LED in sync with TEST or a camera trigger indicates normal transmission.

Learn Mode

If TEST is held for 10 seconds, LEARN mode will be activated. See [Learn Mode](#) for information. A short red blink in sync with the camera’s trigger indicates normal transmission or reception.

Learning LED sequence: Holding TEST for 10 seconds will cause the unit to pulse red (continuously transmitting), then it will flash amber 4 times (indicating the beginning of Learn mode), then it will pulse amber while listening for a channel to learn. If it learns a channel, it will blink green 1, 2, or 3 times depending on the channel learned, then flash amber 1 more time to indicate LEARN is

complete. If no channels are learned, the radio returns to normal “waiting for trigger” blinking. See LEARN Mode for more information.

Error Condition

Repeated red blinking indicates an error condition. Power off the unit, reseal all connections, and power back on. If the error persists, verify your settings. For example if you are using a Standard channel to trigger a FlexTT5 with a Speedlite in it set to E-TTL, this is an error. The flash needs to be set to manual (See [Manual Mode](#) for more information).

A normal green blink occurs on power up initialization and after [Apply Settings](#) has been pressed in the [PocketWizard Utility](#).

Note that a single red blink when triggering is normal operation.

Reset

If TEST is held on power up then RESET A and RESET B can be performed. Two green blinks in a row indicate that RESET A was completed. Four green blinks in a row appear when RESET B has been completed. RESET A resets channels learned in the field back to those programmed via the PocketWizard Utility. RESET B sets the radio to factory default settings.

This section contains compatibility information for the Nikon [MiniTT1](#) and [FlexTT5](#) ControlTL radios.

Next recommended reading: [PocketWizard Utility](#)

Contents

- [1 Current Firmware](#)
- [2 Camera Compatibility](#)
 - [2.1 Non-Compatible Cameras](#)
- [3 Speedlight Compatibility](#)
 - [3.1 Nikon Speedlights as Remotes](#)
 - [3.2 Nikon Speedlights as On-Camera Master Flashes](#)
 - [3.3 Non-Compatible Flashes](#)
- [4 Operational Notes](#)
 - [4.1 ControlTL Remote Camera](#)
 - [4.2 Flash Exposure Compensation](#)
 - [4.3 Speedlight Light Pattern](#)
 - [4.4 Vibration Reduction \(VR\) Mode Auto-Detection](#)
 - [4.5 Pre-Flash Boost controls](#)
 - [4.6 Camera-Specific Operational Considerations](#)
- [5 Nikon Special Notes](#)
 - [5.1 FV Lock](#)
 - [5.2 Unsupported Modes](#)
 - [5.3 In-Camera Flash Control](#)
 - [5.4 Rear-Curtain Sync and Bulb](#)
 - [5.5 Remote Infrared Control](#)

Current Firmware

The latest firmware available for the Nikon MiniTT1 and FlexTT5 is '*version 3.800*'.

MiniTT1s and FlexTT5s can be updated to this version via the [PocketWizard Utility](#).

Camera Compatibility

The MiniTT1 and FlexTT5 for Nikon are compatible with these modern Nikon digital cameras capable of using Nikon's latest i-TTL / CLS protocol:

Currently Supported Cameras			
Nikon D4S	Nikon D810	Nikon D7100	Nikon Df
Nikon D4	Nikon D800	Nikon D7000	
Nikon D3x	Nikon D800E	Nikon D5300*	Nikon D90
Nikon D3s	Nikon D750	Nikon D5200*	Nikon D80
Nikon D3	Nikon D700	Nikon D5100*	Nikon D40x*
Nikon D2x	Nikon D610	Nikon D5000*	Nikon D40*
	Nikon D600	Nikon D3300*	
	Nikon D300s	Nikon D3200*	

	Nikon D300	Nikon D3100*	
	Nikon D200	Nikon D3000*	

* These cameras do not support HyperSync or HSS/FP-Sync operation: D5300, D5200, D5100, D5000, D3300, D3200, D3100, D3000, D40x, D40

Non-Compatible Cameras

Incompatible Pre-2009 Cameras		
D2Xs	D1H	D70
D2Hs	D1	D60
D2H	D100	D50
D1X	D70s	

BASIC TRIGGER MODE: Almost all cameras and flashes are compatible with the MiniTT1 and FlexTT5 when the radios are configured for Basic Trigger Mode. Basic Trigger Mode disables all flash power control and TTL functions of the radios.

Speedlight Compatibility

The MiniTT1 & FlexTT5 for Nikon are compatible with the following modern Nikon Speedlights as Remote flashes and Nikon On-Camera Master flashes: (Other flashes may work in [Basic Trigger Mode](#) without CLS / i-TTL.)

Nikon Speedlights as Remotes

- SB-910
- SB-900
- SB-800
- SB-700
- SB-600
- SB-500
- SB-400 (*not capable of HSS*)

Nikon Speedlights as On-Camera Master Flashes

- SB-910
- SB-900
- SB-800
- SB-700
- SU-800 Wireless Speedlight Commander

Note: The "GN" ratio mode of the SB-700 is not supported.

Non-Compatible Flashes

- SB-300 - currently under consideration for potential support in a future firmware upgrade

Any older generation Nikon Flashes as Remote Units Such as:

- SB-80DX
- SB-80
- SB-28DX
- SB-28
- SB-50
- any other Speedlight not listed above

BASIC TRIGGER MODE: Almost all cameras and flashes are compatible with the MiniTT1 and FlexTT5 when the radios are configured for Basic Trigger Mode. Basic Trigger Mode disables all flash power control and TTL functions of the radios.

Operational Notes

ControlTL Remote Camera

Using the default settings, remote cameras with a receiving FlexTT5 will be limited to Single Shot mode and there will be a delay between subsequent triggers. To learn more about remote camera triggering with ControlTL radios, visit our [Remote Camera Triggering](#) page.

Flash Exposure Compensation

Flash exposure compensation (FEC) is controlled as part of the camera's exposure compensation. This is normally adjusted via the FEC button on the camera, which is indicated by a flash symbol/lightning bolt beside a "+/-" symbol. If your camera does not have an FEC button, you can also adjust it via the exposure compensation button near the shutter release, indicated by a "+/-" symbol. This compensation works in all shooting modes, including Manual. When in Manual mode, the exposure compensation will only affect the flash exposure, as the camera exposure is controlled by the settings you have selected manually.

Speedlight Light Pattern

The SB-910, SB-900, and SB-700 have a special Light Pattern Menu, which allows you to set a slightly different light output pattern. Of the three options in this menu, "STD" for Standard output must be selected. Selecting either "CW" for Center-Weighted or "EVEN" for Even output is not supported and may result in exposure errors.

Vibration Reduction (VR) Mode Auto-Detection

When using VR Lenses, switching the VR Mode on or off results in the transmitting radio taking a calibration shot to adjust for the resulting flash timing shift. This may result in a single missed frame after toggling the VR mode on or off. In rare cases, when shooting above your camera's x-sync speed (1/250th or faster on most cameras), this calibration shot may fail, and continued dark frames may occur. If this happens, take a test shot at 1/160th or 1/200th of a second, and then move back to your desired shutter speed. In the interest of simplicity, we recommend leaving VR-mode either on or off for the duration of your shooting session.

Pre-Flash Boost controls



Modern TTL (Through The Lens) metering systems are based on a pre-flash fired an instant before the camera's shutter opens, allowing the camera to calculate the amount of light output required for a proper exposure. Pre-Flash Boost is a feature which increases this metering pre-flash's light output, which helps to make more accurate TTL exposure calculations at the longer distances our ControlTL radios can achieve. It also helps compensate for light lost when using a light modifier like an umbrella or soft box. By default, this feature adds approximately 2 stops of light output to these metering flashes. This light output can be controlled by the EV controls on the back of the remote flash. The amount of pre-flash boost compensation set on the remote flashes will not affect the final exposure. This allows you to increase the pre-flash boost beyond the default value for subjects farther away, and decrease the pre-flash boost for subjects very close to the flash.

Camera-Specific Operational Considerations

For more information about operational considerations that may affect your camera specifically, choose the model below:

Currently Supported Cameras			
Nikon D4S	Nikon D810	Nikon D7100	Nikon Df
Nikon D4	Nikon D800	Nikon D7000	
Nikon D3x	Nikon D800E	Nikon D5300*	Nikon D90
Nikon D3s	Nikon D750	Nikon D5200*	Nikon D80
Nikon D3	Nikon D700	Nikon D5100*	Nikon D40x*
Nikon D2x	Nikon D610	Nikon D5000*	Nikon D40*
	Nikon D600	Nikon D3300*	
	Nikon D300s	Nikon D3200*	
	Nikon D300	Nikon D3100*	
	Nikon D200	Nikon D3000*	

Nikon Special Notes

The following special notes apply to all Nikon cameras.

FV Lock

FV Lock is not currently supported with PocketWizard radios.

Unsupported Modes

- Mirror Up mode is not fully supported at this time - test with your specific configuration before using. You may be able to use the radios in [Basic Trigger Mode](#) for this setting.
- Exposure Delay mode (set via in-camera menu) is not currently supported.
- Repeater/RPT mode is not currently supported.

In-Camera Flash Control

Using in-camera “Flash Control for Built In Flash” menu to control remote zones is not currently supported.

Rear-Curtain Sync and Bulb

Rear Curtain Sync and Bulb mode cannot be used together. For more information, visit our [Rear Curtain Sync](#) page.

Remote Infrared Control

ControlTL radios disable ALL infra-red/optical communication pulses used in Nikon’s native i-TTL system, and will not trigger remote flashes configured to receive these pulses. A PocketWizard radio is required for each remote flash you want to trigger.

Do you need personalized customer service?

If you need more information or personalized assistance, please contact us via our [Inquiries Page](#).

This section contains compatibility information for the Canon [MiniTT1 and FlexTT5](#) ControlTL radios.

Next recommended reading: [PocketWizard Utility](#)

Contents

- [1 Current Firmware](#)
- [2 Camera Compatibility](#)
 - [2.1 Non-Compatible Cameras](#)
- [3 Speedlite Compatibility](#)
 - [3.1 Current Generation](#)
 - [3.2 Previous Generation](#)
 - [3.3 3rd Party Speedlite Compatible Flashes](#)
 - [3.3.1 Metz](#)
 - [3.3.2 Nissin](#)
- [4 Operational Notes](#)
 - [4.1 ControlTL Remote Camera](#)
 - [4.2 Camera-Specific Operational Considerations](#)

Current Firmware

The latest firmware version available for the Canon MiniTT1 and FlexTT5 is **6.800**.

MiniTT1s and FlexTT5s can be updated to this version via the [PocketWizard Utility](#).

Camera Compatibility

The MiniTT1 and FlexTT5 for Canon are compatible with these modern Canon digital cameras capable of using Canon's latest E-TTL II protocol:

Currently Supported Cameras			
Canon 1D X	Canon 7D Mark II	Canon 70D	Canon Rebel T5i (700D)
Canon 1D Mark IV	Canon 7D	Canon 60D	Canon Rebel T5 (1200D)
Canon 1Ds Mark III	Canon 6D	Canon 50D	Canon Rebel SL1 (100D)
Canon 1D Mark III	Canon 5D Mark III	Canon 40D	Canon Rebel T4i (650D)
Canon 1Ds Mark II	Canon 5D Mark II	Canon 30D	Canon Rebel T3i (600D)
Canon 1D Mark II N	Canon 5D	Canon 20D	Canon Rebel T3 (110D)
Canon 1D Mark II			Canon Rebel T2i (550D)
			Canon Rebel T1i (500D)
			Canon Rebel XSi (450D)
			Canon Rebel XTi (400D)
			Canon Rebel XT (350D)
			Canon Rebel XS (1000D)

For optimal performance, it is highly recommended to specify your camera model in the [Misc Tab](#) of the [PocketWizard Utility](#) for your transmitting radio.

Non-Compatible Cameras

Incompatible Pre-2004 Cameras		
1D (Mark I)	1Ds (Mark I)	D60
10D	D30	Rebel (300D)
DCS 3	DCS 1	D2000 / D6000

BASIC TRIGGER MODE: Almost all cameras and flashes are compatible with the MiniTT1 and FlexTT5 when the radios are configured for Basic Trigger Mode. Basic Trigger Mode disables all flash power control and TTL functions of the radios.

Canon's PowerShot cameras, such as the G9, G10, G11, G12 and earlier models, are not supported with our radios. Although these cameras can use many of the same flashes as modern Canon DSLRs, they use a very different implementation of Canon's E-TTL protocol.

Speedlite Compatibility

Special Note: Canon Speedlite models 580EX and 580EX II, and especially the older 430EX (not the newer 430EX II), emit RF interference that can substantially reduce the effective operating range of many radio slaves, including the FlexTT5 when used as a receiver. For these model flashes, please utilize the mounting suggestions on PocketWizard.com

The MiniTT1/FlexTT5 are E-TTL II compatible with these Canon flashes:

Current Generation

600EX-RT

Supported Modes:

- Master E-TTL
- Master Manual
- Remote E-TTL
- Remote Manual

Unsupported Modes:

- Multi (stroboscopic) is not supported.
- Group mode is not supported.
- "ALL" selection is not supported, but Ratios are available in supported Master modes.

580EX II

Full feature compatibility.

Range limited due to RF interference from flash only when connected to a remote FlexTT5.

See [Long Range Performance](#).

Not range limited when used on a transmitting radio.

430EX II

Full feature compatibility.

Excellent range performance with this flash.

270EX

Can be used on the MiniTT1 or FlexTT5 (Transmit or Receive) in ETTL mode.

Range slightly limited due to some RF interference from Speedlite only when connected to a remote FlexTT5.

To use this flash on a ControlTL radio mounted on a camera at HSS shutter speeds, you first need to enable HSS mode in the flash. Mount the 270EX directly on a camera (no radio in-between) and enable HSS mode via the camera's menus. Once that mode is enabled, the flash will work properly at HSS shutter speeds when mounted on a MiniTT1 or FlexTT5 when used as a transmitter. HSS operation is automatic (no need to set it) when used on a FlexTT5 as a receiver.

This flash may have occasional exposure issues when used on a MiniTT1 or FlexTT5 mounted directly on certain cameras like the 5D Mark II, 40D, 20D, and possibly others.

270EX II

Can be used on the MiniTT1 or FlexTT5 (Transmit or Receive) in ETTL mode.

Significantly range limited due to RF interference from flash only when connected to a remote FlexTT5. See [Long Range Performance](#).

To use this flash on a ControlTL radio mounted on a camera at HSS shutter speeds, you first need to enable HSS mode in the flash. Mount the 270EX directly on a camera (no radio in-between) and enable HSS mode via the camera's menus. Once that mode is enabled, the flash will work properly at HSS shutter speeds when mounted on a MiniTT1 or FlexTT5 when used as a transmitter. HSS operation is automatic (no need to set it) when used on a FlexTT5 as a receiver.

This flash may have occasional exposure issues when used on a MiniTT1 or FlexTT5 mounted directly on certain cameras like the 5D Mark II, 40D, 20D, and possibly others.

This flash will not do AF assist, as it uses the flash itself to do AF assist on camera, rather than using IR like other flashes. As such, this different mode is not supported.

320EX

Full Feature Compatibility

Excellent range performance with this flash.

Some RF interference present when LED lamp is on.

Previous Generation

580EX

Full feature compatibility.

Range limited due to RF interference from flash only when connected to a remote FlexTT5.

See [Long Range Performance](#).

Not range limited when used on a transmitting radio.

430EX

Full feature compatibility.

Significantly range limited due to RF interference from flash only when connected to a remote FlexTT5. See [Long Range Performance](#).

Not range limited when used on a transmitting radio.

550EX

Full feature compatibility.

Excellent range performance with this flash.

420EX

Full feature compatibility.

220EX

Can be used on FlexTT5 as a receiver in E-TTL mode only.

Cannot be used on MiniTT1 or FlexTT5 as a transmitter.

This flash performs better if an OC-E3 cable is used.

[BASIC TRIGGER MODE](#): Almost all cameras and flashes are compatible with the MiniTT1 and FlexTT5 when the radios are configured for Basic Trigger Mode. Basic Trigger Mode disables all flash power control and TTL functions of the radios.

3rd Party Speedlite Compatible Flashes

Metz

58 AF-1 (Metz firmware v5.0)

48 AF-1 (Metz firmware v4.0)

These flashes can only be used if [Pre-Flash Boost](#) is disabled on the [Flash Tab](#) in the [PocketWizard Utility](#) is disabled. *Note: Pre-Flash Boost is disabled by default.*

These flashes may only be used on a remote FlexTT5 used as a receiver. They are not compatible as on-camera MASTER flashes.

Nissin

The Nissin Di622, Di622 Mark II, Di866, and Di866 Mark II for Canon are currently compatible with ControlTL radios (such as the MiniTT1 and FlexTT5) with certain limitations. Please see our [Nissin Compatibility page](#) for full details.

Operational Notes

ControlTL Remote Camera

Using the default settings, remote cameras with a receiving FlexTT5 will be limited to Single Shot mode and there will be a delay between subsequent triggers. To learn more about remote camera triggering with ControlTL radios, visit our [Remote Camera Triggering](#) page.

Mirror Lockup mode is not compatible with ControlTL settings, but may work if the radios are set to [Basic Trigger Mode](#).

Camera-Specific Operational Considerations

For more information about operational considerations that may affect your camera specifically, choose the model below:

Currently Supported Cameras			
Canon 1D X	Canon 7D Mark II	Canon 70D	Canon Rebel T5i (700D)
Canon 1D Mark IV	Canon 7D	Canon 60D	Canon Rebel T5 (1200D)
Canon 1Ds Mark III	Canon 6D	Canon 50D	Canon Rebel SL1 (100D)
Canon 1D Mark III	Canon 5D Mark III	Canon 40D	Canon Rebel T4i (650D)
Canon 1Ds Mark II	Canon 5D Mark II	Canon 30D	Canon Rebel T3i (600D)
Canon 1D Mark II N	Canon 5D	Canon 20D	Canon Rebel T3 (110D)
Canon 1D Mark II			Canon Rebel T2i (550D)
			Canon Rebel T1i (500D)
			Canon Rebel XSi (450D)
			Canon Rebel XTi (400D)
			Canon Rebel XT (350D)
			Canon Rebel XS (1000D)

Do you need personalized customer service?

If you need more information or personalized assistance, please contact us via our [Inquiries Page](#).

Channels allow you to work with other photographers or keep your triggering exclusive. Some Channels operate on different frequencies to help you avoid radio interference. All PocketWizard radios set to the same Channel work together.

This section has Channel tables for the USA FCC / IC (Industry Canada) frequency radios that operate between 340 and 354 MHz. If you have CE frequency radios that operate between 433.42 and 434.42 MHz range then visit the [CE Channels](#) page.

There are two kinds of PocketWizard Channels: Standard Channels and ControlTL Channels.

Contents

- [1 Standard Channels](#)
 - [1.1 Standard Channels 1 through 16](#)
 - [1.2 Standard Channels 17 through 32](#)
- [2 ControlTL Channels](#)
- [3 Channel and Frequency Overlap](#)
- [4 Mixing ControlTL and Standard Channels](#)
 - [4.1 ControlTL Transmitter](#)
 - [4.2 Standard Channel Transmitter](#)

Standard Channels

Standard Channels are used when triggering a Plus series, [MultiMAX](#) or other PocketWizard radio that performs triggering only and not power control or TTL functions.

Standard Channels 1 through 16

Standard Channels 1 through 16 are considered Classic or Legacy Channels and are the most basic PocketWizard Channels. They are used for simple triggering scenarios, and contain no zones, power control, or TTL functions.

These Channels all exist on the same frequency. Each Channel is its own 16-bit digital code on top of that frequency. The frequency in use for USA FCC/IC radios is 344.04 MHz. The Plus and Plus II radios use only Channels 1 through 4. The PlusX uses Channels 1 through 10. The Plus III and MultiMAX radios use a total of 32 Channels. 1-16 are Standard Channels, 17-32 are Quad-Zone Triggering Channels (see below for details).

All other PocketWizard radios use Standard Channels 1 through 16.

Standard Channels 1 through 16		
Standard Channel		
1	Plus and Plus II only use channels 1 through 4	All PocketWizard radios including: MAX, MultiMAX, ControlTL radios, OEM flashes, Sekonic meters, Classics *
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

* Some very early models of the Classic only had channels 1 through 10.

Standard Channels 17 through 32

Standard Channels 17 through 32 were introduced with the PocketWizard MAX. They are also called Quad-Zone Triggering Channels or MultiMAX Channels. These Channels add the benefit of Zones A, B, C, and D. Zones allow you to control up to 4 different groups of lights on the same Channel.

These Channels are each on their own frequency and each Channel number is its own 20-bit digital code.

Standard Channels 17 through 32
--

Standard Channel	Frequency	
17	346.5	All PocketWizard radios except: Plus, Plus II, Classics
18	347	
19	347.5	
20	348	
21	348.5	
22	349	
23	349.5	
24	350	
25	350.5	
26	351	
27	351.5	
28	352	
29	352.5	
30	353	
31	353.5	
32	354	

ControlTL Channels

ControlTL Channels were introduced with the Canon MiniTT1 and FlexTT5. They are used in all ControlTL radios like the Canon & Nikon MiniTT1 and FlexTT5, as well as the PowerST4, PowerMC2, or other ControlTL radios. These Channels allow for remote power control of compatible studio flashes, and work with ControlTL signals sent from a transmitting ControlTL radio.

ControlTL Channels do not have a unique channel code like Standard Channels, and are separated only by frequency.

ControlTL Channels 1 through 20
--

ControlTL Channel	Frequency	
1	340	
2	345	
3	341	
4	346	
5	346.5	
6	347	
7	347.5	
8	348	
9	348.5	
10	349	
11	349.5	
12	350	
13	350.5	
14	351	
15	340.5	
16	341.5	
17	342	
18	342.5	
19	343	
20	345.5	

All PocketWizard ControlTL radios like:
MiniTT1, FlexTT5
PowerST4, PowerMC2

Channel and Frequency Overlap

Some ControlTL Channels use the same frequencies as some Standard Channels. A ControlTL Channel broadcasting on a Standard Channel's frequency will not trigger it, but if the radio transmissions are occurring at the same time, then there is a possibility one or both may not trigger. A single ControlTL transmitter set to transmit on both Standard Channel 17 and ControlTL Channel 5 will handle this properly. Two radios on the same frequency, like a MultiMAX transmitting on Standard Channel 18 and a ControlTL radio receiving on ControlTL Channel 6, may interfere with each other - when the MultiMAX is transmitting, the ControlTL receiver may not hear its trigger because it is on the same frequency.

Channels on the same Frequency		
Standard Channel	ControlTL Channel	Frequency
17	5	346.5
18	6	347
19	7	347.5
20	8	348
21	9	348.5
22	10	349

23	11	349.5
24	12	350
25	13	350.5
26	14	351

Mixing ControlTL and Standard Channels

It is easy to use [ControlTL](#) and Standard Channel radios together, combining both types of Channel into one setup. How you make this work will depend primarily on the transmitter you are using.

ControlTL Transmitter

If you are using a [MiniTT1](#) or [FlexTT5](#) as a transmitter, you can incorporate Standard Channel remotes without changing any radio settings. The MiniTT1 and FlexTT5 transmit both ControlTL and Standard Channels simultaneously, allowing any PockwetWizard receiver to be triggered in sync. This enables you to use TTL or power-controlled flashes alongside other manual flashes.

For this setup, simply match all the Channels on your radios. To see what Channels you are using on your ControlTL transmitter, connect the radio to your computer via USB and launch the [PocketWizard Utility](#). Navigate to the [Channel Tab](#) and note both the ControlTL Transmit Channel and Standard Transmit Channel. By default the MiniTT1 and FlexTT5 use ControlTL and Standard Channel 1 in Configuration 1 (C1).

Standard Channel Transmitter

If you are using a Standard Channel radio like the [Plus III](#), [PlusX](#), [MultiMAX](#), or [Plus II](#) as a transmitter, you can still use your FlexTT5s as receivers. The FlexTT5 can only receive on one type of Channel at a time. In order for the FlexTT5 to receive on a Standard Channel, you will want to configure it for [Basic Trigger Mode](#). Once the radio is set to Basic Trigger, just match the receive Channel to that of your transmitter.

NOTE: We highly recommend using Basic Trigger Mode for FlexTT5s meant to receive on a Standard Channel. Only use the "Use ControlTL for Receive" check-box if you need your receiving FlexTT5 to use [Relay Mode](#) to trigger a TTL remote in turn.

Next recommended reading: [Canon Compatibility](#) or [Nikon Compatibility](#)

Contents

- [1 CE Standard Channels](#)
 - [1.1 CE Standard Channels 1 through 16](#)
 - [1.2 CE Standard Channels 17 through 32](#)
- [2 CE ControlTL Channels](#)

Channels allow you to work with other photographers or keep your triggering exclusive. Some Channels operate on different frequencies to help you avoid radio interference. All PocketWizard radios set to the same Channel work together.

This section has Channel tables for the CE / European frequency radios that operate between 433.62 and 434.22 MHz. If you have FCC frequency radios that operate between 340 and 354 MHz range then visit the [FCC Channels](#) page.

There are two kinds of PocketWizard Channels: Standard Channels and ControlTL Channels.

CE Standard Channels

Standard Channels are used when triggering a Plus series (Plus, Plus II, PlusX or Plus III), MultiMAX or other PocketWizard radio that performs triggering only and not power control or TTL functions.

CE Standard Channels 1 through 16

Standard Channels 1 through 16 are considered Classic or Legacy Channels and are the most basic PocketWizard Channels. They are used for simple triggering scenarios, and contain no zones, power control, or TTL functions.

These Channels all exist on the same frequency. Each channel is its own 16-bit digital code on top of that frequency. The frequency in use for CE radios is 433.62 MHz.

The Plus and Plus II radios use only channels 1 through 4. The PlusX radios use Channels 1 through 10

All other PocketWizard radios use Standard Channels 1 through 16.

CE Standard Channels 1 through 16		
Standard Channel		
1	Plus and Plus II only use channels 1 through 4	All PocketWizard radios including: MAX, MultiMAX, ControlTL radios, OEM flashes, Sekonic meters, Classics *
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

* = some very early models of the Classic only had Channels 1 through 10

CE Standard Channels 17 through 32

Standard Channels 17 through 32 were introduced with the PocketWizard MAX. They are also called Quad-Zone Triggering channels or MultiMAX channels. These Channels add the benefit of Zones A, B, C, and D. Zones allow you to control up to 4 different groups of lights on the same Channel.

These Channels use the 434.22mHz frequency, and each Channel number is its own 24-bit digital code.

CE ControlTL Channels

ControlTL Channels were introduced with the Canon MiniTT1 and FlexTT5. They are used in all ControlTL radios like the Nikon MiniTT1 and FlexTT5, as well as the PowerST4, PowerMC2, or other ControlTL radios. These channels allow for remote power control of compatible studio flashes, and work with Canon E-TTL II and Nikon i-TTL/CLS commands.

ControlTL Channels do not have a unique channel code like Standard Channels and are separated only by frequency.

CE ControlTL Channels 1 through 3
--

ControlTL Channel	Frequency	All PocketWizard ControlTL radios like: MiniTT1, FlexTT5 PowerST4, PowerMC2
1	433.42	
2	434.42	
3	433.92	

Next recommended reading: [Mounting](#)



Learn Mode allows you to change channels in a ControlTL radio when you are away from your computer by using any PocketWizard transmitter to teach a new channel. This allows you to change to a different channel or frequency when shooting at an event and you don't have access to the [PocketWizard Utility](#).

It is **highly recommended** that you use your computer to set your channels whenever possible, but this handy mode is provided for special situations.

Contents

- [1 Important](#)
- [2 Standard or ControlTL?](#)
 - [2.1 Transmitting channel](#)
 - [2.2 Receiving channel](#)
- [3 Engaging Learn Mode](#)
 - [3.1 Programming FlexTT5 units for ControlTL operation when teaching with a Standard PocketWizard](#)
- [4 Special Notes](#)
- [5 Corresponding Channels Table](#)

Important

IMPORTANT: Learn Mode is not required for normal operation of your radios. It is intended as a tool for resolving channel conflicts in the field. Most photographers can use the default channels safely. If you wish to operate on different channels, then the [PocketWizard Utility](#) is the recommended method for setting channels.

See the [PocketWizard Utility](#) section for more information on setting channels from within the Utility. See the [Channels](#) section for more information on channels and frequencies.

Standard or ControlTL?

When Learn Mode is engaged on a ControlTL radio, that radio will listen to all the frequencies and channels that it can. As soon as it hears a trigger from another PocketWizard transmitter, it learns a channel.

A ControlTL transmitter like the FlexTT5 or MiniTT1 transmits on two channels with each trigger: ControlTL and Standard. You need to make sure the radio you are teaching learns the proper one.

You need it to learn a ControlTL if you are using Canon or Nikon Speedlights in TTL mode.

To teach ControlTL radios to use Standard channels, use a Standard transmitter like a Plus II or MultiMAX as the teaching radio for all learning radios including the MiniTT1 or FlexTT5 to be used as the primary transmitter.

To teach ControlTL radios to use a ControlTL channel, teach the ControlTL transmitter you will be using first, then use it to teach all the radios you want to receive on ControlTL channels. If all you have to teach with is a Standard radio like a Plus II or MultiMAX, you can use it to teach a different ControlTL channel. See the table below for corresponding channels.

If you are using a ControlTL transmitter like the MiniTT1 or FlexTT5 on your camera, and you want to have your flash respond to power settings from the AC3 or perform [PowerTracking](#), make sure your radios learn a ControlTL channel. Standard Channels on the Plus II and MultiMAX can be used for triggering only.

Transmitting channel

A MiniTT1 or FlexTT5 learning from another PocketWizard transmitter will learn both a Standard channel as well as a corresponding ControlTL channel for transmitting. See below for more information about corresponding channels.

Receiving channel

A FlexTT5 Transceiver can only receive on one channel at a time. It receives on *either* a ControlTL *or* a Standard channel, not both simultaneously. When being taught from a Standard transmitter it will learn to receive only on a Standard channel. When being taught from a ControlTL transmitter, it is designed to learn the ControlTL channel, but you need to verify that using the information below.

Engaging Learn Mode

Follow the steps below to put your PowerST4 in Learn Mode.

IMPORTANT: Hold radios at least 2 feet apart when teaching/learning. Your flash may trigger during teach/learn.

1. Prepare your ControlTL radio for Learn Mode: [MiniTT1 and FlexTT5](#) - turn the radio on and select the configuration to be taught, C.1 or C.2. Wait 3 or 4 seconds until you see the normal green blinks indicating the radio is ready to go with good batteries. Learning takes a lot of power for the

MiniTT1 so be sure you are starting with a good coin cell battery.



[PowerST4](#) - Plug

the PowerST4 radio into a compatible flash and turn it ON.

2. Press and hold TEST on the radio to be taught for several seconds. The led will pulse red because you are transmitting!



3. When the Status LED blinks amber 4 times, Learn Mode is engaged (amber pulsing)! Quickly release TEST and ...



4. Immediately press and hold TEST on the teaching transmitting radio (MiniTT1, FlexTT5, MultiMAX or Plus II).



5. When the Status LED blinks green, the channel is learned:



- 1 green blink = Low Standard channel learned (1 through 16, including Plus 1 through 4)
- 2 green blinks = High Standard channel learned (MultiMAX 17 through 32)
- 3 green blinks = ControlTL channel learned for MiniTT1 or FlexTT5
- If you see no green blinks during the LEARN cycle then the radio did not learn a new channel and will use the previous one. Hold the radios farther apart and try teaching again.

For remote E-TTL II to function, the ControlTL channel must be learned. If you see only 1 or 2 green blinks after teaching then a Standard channel was learned and E-TTL II will not function. If you desire E-TTL II functionality, teach the FlexTT5 again from the MiniTT1 or FlexTT5 to be used as the primary transmitter and look for 3 green blinks.

Programming FlexTT5 units for ControlTL operation when teaching with a Standard PocketWizard

If you are using a FlexTT5 as a transmitter in your system, and you want it to learn a different ControlTL channel from a Standard transmitter, you need to follow this sequence to make sure all of your FlexTT5 radios transmit and receive on the same channel.

1. Teach a transmitting FlexTT5 with a standard PocketWizard.



2. Use the programmed FlexTT5 transmitter to teach all other FlexTT5 receivers. Make sure you see 3 green blinks which confirms the ControlTL channel was learned. If you see only 1 or 2 blinks after teaching, then the FlexTT5 is listening on a Standard channel and will not receive TTL or PowerTracking information. Teach it again if you need TTL or PowerTracking.



3. Reprogram the FlexTT5 transmitter (the first one you taught) with one of the FlexTT5 receivers. This assures all FlexTT5 radios will send and receive on the same ControlTL channel.



Special Notes

- On a transmitting radio like a MiniTT1 or FlexTT5, when you are holding TEST to engage Learn Mode, you are also transmitting! Make sure remote equipment that you do not want to trigger is turned off.
- Activating LEARN in a MiniTT1 causes a large drain on the coin cell battery. To maintain the best battery life, use the [PocketWizard Utility](#) to teach channels to the MiniTT1 whenever possible.
- For a MiniTT1 or FlexTT5 only the configuration set, C.1 or C.2, will be taught. The other configuration will retain its settings.
- For a MiniTT1 or FlexTT5 all other settings as set in the [PocketWizard Utility](#) will remain in effect. If you wish to reset your radio to [Factory Defaults](#), follow that procedure, then engage Learn Mode.
- Learn Mode is only used by ControlTL radios like the MiniTT1, FlexTT5 or PowerST4. Standard radios like the Plus II and MultiMAX do not learn channels, but can be used to teach ControlTL radios different channels.
- Radios from different world regions cannot be used together with Learn Mode. CE radios cannot teach or learn US FCC/IC channels and frequencies, and vice versa. See the [Channels](#) section for more information on channels and frequencies.
- A Sekonic Meter cannot be used to teach. Its brief trigger mode is not compatible with LEARN.
- Custom IDs from MultiMAX radios are not learned.
- When teaching a ControlTL transmitter from another ControlTL transmitter, usually only the ControlTL channel is learned and not the Standard Channel. Even though your teaching radio is transmitting on two channels, Standard and ControlTL, the learning radio only hears the one it received first which is usually the ControlTL channel. The Standard channel that the radio being taught will use is based on the table below.

Corresponding Channels Table

When you teach a ControlTL transmitter, like a MiniTT1, from a Standard transmitter, like a Plus II, the ControlTL transmitter learns to transmit on the Standard channel you taught it with **and** uses a corresponding ControlTL channel from the table below.

If you taught it this Standard Channel	It will also transmit on this ControlTL Channel
1	1
2	2
3	3
4	4
5	1
6	2
7	3
8	4
9	1
10	2
11	3
12	4
13	1
14	2
15	3
16	4
17	5
18	6
19	7
20	8
21	9
22	10
23	11
24	12
25	13
26	14
27	15
28	16
29	17
30	18
31	19
32	20

This is also true if you are teaching one ControlTL transmitter with another - the ControlTL channel

will be learned and the Standard channel will be based on the table below.

If you taught it this ControlTL Channel	It will also transmit on this Standard Channel
1	1
2	2
3	3
4	4
5	17
6	18
7	19
8	20
9	21
10	22
11	23
12	24
13	25
14	26
15	27
16	28
17	29
18	30
19	31
20	32

You will notice in this table that it is not possible to teach Standard channels 5-16 from a ControlTL transmitter.

Next recommended reading: [Advanced Wireless TTL](#)

Contents

- [1 General TTL Considerations](#)
- [2 No Flash On Camera](#)
 - [2.1 Nikon Note](#)
 - [2.2 Canon Note](#)
- [3 Flash on Camera](#)
 - [3.1 Canon Basic Wireless E-TTL II](#)
 - [3.2 Nikon Basic Wireless i-TTL](#)

This section talks about Basic Wireless TTL where all Speedlights are used as one zone of camera-controlled light and not independently controlled using zones, groups, or ratios. Read [Advanced Wireless TTL](#) for independently controlling different groups or zones of TTL flash, or for working with ratios. You may also want to read about [Manual Flash](#).

Make sure you read the [Getting Started](#) section first!

All references to TTL on this page refer exclusively to Canon's E-TTL II system, or Nikon's i-TTL/CLS.

Film TTL or earlier digital TTL systems are not supported.

"Speedlite" and "Speedlight" are used interchangeably. Either may be used to refer to Nikon or Canon's hot shoe flashes. Nikon or Canon specific information will be noted as needed.

REMINDER: Speedlights mounted on a [remote FlexTT5](#) should be set to their standard i-TTL/E-TTL mode. Do not use <MASTER>, <REMOTE> or <SLAVE> modes on a remote flash.

General TTL Considerations

There are several important factors to keep in mind when using the ControlTL system to extend wireless TTL:

- Operate the camera normally by pressing the shutter release button halfway to establish focus or metering before shooting. On some cameras, pressing the shutter release button too quickly before camera wakeup may cause the pre-flash to miss or cause an over/under-expose.
- The range of Canon or Nikon's TTL ability to measure light may be exceeded by the range of the ControlTL system. In other words, it is possible to place Speedlites so far away that the camera cannot accurately measure their light in the frame. Adjust your remote flashes to light the subject better so the camera can make a proper exposure calculation.
- Angle of operation is extended. You can place flashes in more places, including behind you, than allowed by Canon or Nikon's light pulse system.

No Flash On Camera



This simple mode of operation allows you to use one or more remote TTL flashes as one zone of light. All remote TTL flashes will fire at the same power level which is chosen automatically by the camera.

1. Slide a MiniTT1 Transmitter onto the camera and tighten the locking ring.
2. Slide a remote Speedlite onto a FlexTT5 Transceiver's hot shoe, tighten the locking ring, and secure the FlexTT5. Repeat for each remote Speedlite. The remote Speedlites should be set to normal mode, not <MASTER> or <SLAVE> or <REMOTE>.
3. Power on your equipment from the top down (flash, then radio, then camera).
4. Trigger normally.

Nikon Note

The MiniTT1 and FlexTT5 mirror native Nikon CLS/iTTL behaviors closely. Please read your Nikon manuals on Advanced Wireless Lighting, also called CLS (Creative Lighting System) for details.

This "No Flash On Camera" method is like using Nikon's wireless system with one of the following directly in the shoe of the camera:

- An SU-800 in TTL Commander mode, with a single remote group/zone selected as TTL with 0.0 FEC.
- An SB-800 or SB-900 as MASTER in Advanced Wireless Lighting TTL Mode with master flash cancelled and a single remote group/zone selected as TTL with 0.0 FEC.

Canon Note

The MiniTT1 and FlexTT5 mirror native Canon E-TTL behaviors closely. Please read your Canon manuals on Fully Automatic Wireless Flash, also called E-TTL II Wireless Autoflash, for more details.



This "No Flash On Camera" method is the same as using Canon's wireless system with one of the following directly in the shoe of the camera:

- An ST-E2 in non-ratio mode
- A 580EX (I or II) Speedlite in <MASTER> mode, main flash off, in non-ratio mode.

Flash on Camera

This mode is similar to the above, adding a flash on top of the ControlTL radio in the shoe of your camera.

Canon Basic Wireless E-TTL II



This mode is identical to the above, adding a flash to the top hot shoe of the MiniTT1. All remote E-TTL II flashes and the master flash will be treated as one zone of light and will fire at the same power level which is chosen automatically by the camera.

1. Slide the MiniTT1 Transmitter onto the camera and tighten the locking ring.
2. Slide a Canon Speedlite onto the MiniTT1 and secure the Speedlite's locking foot.
 - [Force TTL Master Mode](#) is engaged by default. You can use <MASTER> Mode if your flash has it, or you can just place a flash in the radio's hot shoe set to normal ETTL mode.
3. Slide the remote Speedlite onto a FlexTT5 Transceiver, tighten the locking ring, and secure the FlexTT5. Repeat for each remote Speedlite. The remote Speedlites should be set to normal ETTL mode, not <MASTER> or <SLAVE>.
4. Power on your equipment from the top down (flash, then radio, then camera).
5. Fire your calibration shot, then trigger normally.

NOTE: You can use a 430EX (I or II) as a master flash! These flashes do not have a master mode, and cannot usually trigger remote E-TTL II flashes. [Force TTL Master Mode](#) is engaged by default which gives these flashes the ability to act as a single zone master flash.

To use the flashes with High Speed Sync, the Master flash must be set for High Speed Sync via the flash's menu. It is not necessary for the remote flashes.

Nikon Basic Wireless i-TTL

The Nikon i-TTL system does not have a basic mode where all remote zones and a MASTER flash are treated as a single zone of light. An attached Nikon flash must be set for MASTER mode, with a remote zone enabled, in order to trigger remote flashes.

Attaching a Nikon flash set for normal, non-MASTER operation will completely disable remote triggers. Only the on-camera flash will fire in this configuration.

In the Nikon i-TTL/CLS system, the MASTER flash is always treated as its own zone of light separate from remote groups or zones. If you want all of your remote Speedlights to trigger as one zone or group of light, just follow the steps in the [Advanced Wireless TTL](#) to set your MASTER flash, and set all of your remote Flex TT5 radios to Zone A. The Zone "M" setting will control the on-camera flash.

Next recommended reading: [Manual Flash](#)

Contents

- [1 Canon E-TTL II](#)
- [2 Nikon Advanced Wireless CLS / i-TTL](#)

This section talks about Advanced Wireless TTL where you can use groups or zones of Speedlights and adjust the light levels among them while still letting the camera make the exposure decisions. You may also want to read about [Manual Flash](#).

Make sure you read the [Getting Started](#) section first!

All references to TTL on this page refer exclusively to Canon's E-TTL II system, or Nikon's i-TTL/CLS.

Film TTL or earlier digital TTL systems are not supported.

"Speedlite" and "Speedlight" are used interchangeably. Either may be used to refer to Nikon or Canon's hot shoe flashes. Nikon or Canon specific information will be noted as needed.

REMINDER: Speedlights mounted on a remote FlexTT5 should be set to their standard i-TTL/E-TTL mode. Do not use <MASTER>, <REMOTE> or <SLAVE> modes on a remote flash.

Canon E-TTL II

Here are some tutorials discussing Canon Wireless Ratios or Manual operation:

- [Wireless Ratios with on camera Flash](#) This tutorial talks specifically about ratios with a MASTER flash on camera contributing light to the exposure in Zone A, and adjusting ratios with a remote flash in Zone B.
- [Wireless Ratios with Remote Flash](#) This tutorial talks specifically about ratios with a flash on camera which is NOT contributing light to the exposure, and is only used for AF-Assist and as a ratio controller for adjusting remote flashes in Zones A and B. It also talks about using an ST-E2 as a ratio controller.
- [Remote Manual Flash Control with a 580EX II](#) This tutorial talks about controlling the manual level of a remote Speedlite from a 580EX II in Manual Master Mode.

Nikon Advanced Wireless CLS / i-TTL

1. Slide the MiniTT1 Transmitter onto the camera and tighten the locking ring.
2. Slide a Nikon Master speedlight like an SB-910 or SB-800 onto the MiniTT1 radio.
 - Set your Speedlight for MASTER = ON and enable remote groups/zones per Nikon instructions. The Nikon SU-800 Wireless Speedlight Commander may also be used.
3. Set remote FlexTT5 radio to desired remote group/zone (A, B, C) using FlexTT5 zone switch.
4. Slide Speedlight onto remote FlexTT5 Transceiver. Set Speedlight for standard i-TTL mode (not

- REMOTE or MASTER). Repeat for each remote Speedlight. All remote i-TTL Speedlights on the same group/zone will be treated as one zone of light.
5. Adjust flash output level compensation using MASTER Speedlight flash controls.
 6. Make sure all your PocketWizard radios are on the same channel and take pictures normally.

IMPORTANT: Nikon Speedlights set to REMOTE = ON and connected to remote FlexTT5 radios will not function properly as remotes. You must be in normal i-TTL mode for remotes to operate properly. Turn off REMOTE or MASTER for your remote Speedlights. Set desired Nikon remote group/zone via remote FlexTT5 zone switch. PocketWizard channel is used instead of Nikon channel. ISO, aperture, aperture, flash exposure compensation (FEC), and other settings will work with exposure normally via the PocketWizard ControlTL system.

Note: Most changes made on camera (ISO, aperture, etc) will not display on back of remote flash's LCD and the remote flash will not zoom with the camera lens. Due to the way our radios communicate with Nikon flashes, the display on the flash LCDs will default to ISO 200, and the zoom will go to the widest the moment you turn on the FlexTT5. Automatic zoom only works for the on-camera Speedlight. The zoom feature on the Speedlights is designed to match the flash's light output to the current focal length of a lens only when the flash is at the camera position. If you want to set the zoom level of a remote Speedlight, it needs to be set manually via the flash's controls. This behavior with our radios is actually the same behavior that Nikon's optical iTTL system exhibits.

The ISO display isn't transmitted to the remote flashes with our radios, because it isn't actually needed for TTL operation. This doesn't affect exposure in any way. Changes in camera ISO will still be accounted for, because our radios do send the TTL metering information to the flash, which responds to changes in power. You'll notice that when using Nikon's own CLS, no ISO information is even displayed.

Next recommended reading: [PowerTracking](#)

The MiniTT1 and FlexTT5 support High Speed Sync (HSS) for Canon and FP Sync for Nikon. No configuration is necessary for the radios.

- If you have a Nikon camera, adjust the Flash Sync Speed setting in the Custom menu to 1/250s (AutoFP) for most cameras. The D600 and D610 need to be set to 1/200s (AutoFP).
- If you are using a Canon flash as an on-camera flash, attached to the transmitting radio, the Master flash needs to be set to HSS via the flash's menu. It is not necessary to set remote Canon flashes to HSS.

HSS/FP is seamlessly engaged with the default settings at appropriate shutter speeds, letting you synchronize flashes that support HSS/FP at any speed.

Keep in mind that flashes actually pulse and act as a continuous light in this mode, which significantly reduces effective flash power.

Read more about the available options for high speed photography with any flash: [Understanding HyperSync and High Speed Sync](#).

See details from Canon about High Speed Sync with Speedlites at canon.co.jp.

See details from Nikon about FP Sync with Speedlights at nikonusa.com.

Next recommended reading: [Understanding HyperSync and High Speed Sync](#)

Contents

- [1 Remote Manual Flash Control from Camera Position](#)
- [2 Triggering Hot Shoe Flashes Manually](#)
- [3 Triggering Studio Strobes](#)

A transmitting MiniTT1 or FlexTT5 can trigger any receiving PocketWizard, including flashes with built-in PocketWizards. They can transmit on any of the 32 [PocketWizard Standard Channels](#) and a receiving FlexTT5 can be used with [MultiMAX zones](#). You can even trigger E-TTL and manual flashes together.

Remote Manual Flash Control from Camera Position

You can use a 580EX II, SB-700, SB-800, SB-900, SU-800, or [AC3 ZoneController](#) as a master unit attached to the PocketWizard on your camera to control manual power levels of compatible flashes connected to ControlTL receivers. The on-camera PocketWizard will communicate with the device in its top shoe and transmit power level changes to remote ControlTL receivers automatically.

Note that when using an on-camera Master unit to control remote power levels, leave remote speedlights in their "TTL" mode. As ControlTL radios use the flash's TTL systems to communicate with Speedlights - even when controlling the power manually from camera position - setting the flash to Manual as described in the sections below will *disable* power controlling ability from your camera.



A 580EX II in manual mode.

Triggering Hot Shoe Flashes Manually

Slide a Speedlite or other manual flash into the top shoe of a FlexTT5 for manual triggering without cords. You can also use a manual flash in the top shoe of an on-camera MiniTT1 or FlexTT5. No configuration of the radio is necessary.

Triggering Studio Strobes

You can use a receiving FlexTT5 to trigger studio strobes. Use our [Cable Finder](#) to find the right cable for lots of different strobes.

If you're using a PocketWizard Plus, [Plus II](#), [MultiMAX](#), or [Sekonic Meter](#) as a transmitter, be sure to set the FlexTT5 to receive on a Standard Channel via [Basic Trigger Mode](#). This can be set in the [PocketWizard Utility](#), under the [Misc Tab](#) while shooting on-location via Learn Mode. See the tutorial on [Learn Mode](#) here.

Note: Do not connect a flash to the camera port (P1) on a FlexTT5. You could damage your radio. This port is for triggering Canon motor drives only and isn't designed for the trigger voltages used by some flashes.

Next recommended reading: [Remote Camera Triggering](#) or [PowerTracking Tab](#)

Contents

- [1 Basic Power Control](#)
- [2 Automatic PowerTracking](#)
- [3 Using an AC3 ZoneController](#)

ControlTL allows you to adjust your remote studio flash's output power directly from the camera position in three ways:

Basic Power Control: With just a ControlTL transmitter on your camera, use your camera's FEC to adjust remote flash output power. This is called PowerTracking - Full Manual and is the default when you are not using an [AC3 ZoneController](#) on your ControlTL transmitter. See the Basic Power Control section for more information.

Automatic PowerTracking: When engaged, any changes to aperture and ISO on your camera are automatically tracked by your remote flash output power to maintain the current exposure level. For example, if you open the aperture on your camera by one stop, then the power output level on your remote flash will decrease by one stop.

There are two ways to engage Automatic PowerTracking:

- *No AC3 ZoneController on your ControlTL transmitter* - Set the PowerTracking mode in the PocketWizard Utility to a setting other than Full Manual for Automatic PowerTracking using just your camera's controls.
- *AC3 ZoneController Auto Mode* - Add an AC3 ZoneController set to A (Auto) on your ControlTL transmitter to adjust power output level independently for up to 3 zones of light in conjunction with Automatic PowerTracking.

AC3 ZoneController Manual Mode - With an AC3 ZoneController on your ControlTL transmitter, you can have simple and direct control over your flash output power. See the section on Using an AC3 ZoneController for more information.

Basic Power Control

With only a MiniTT1 or FlexTT5 on your camera, your camera's FEC (Flash Exposure Compensation) control will adjust your flash power output level for all supported flashes connected to ControlTL receivers.

Nikon Only

The camera's FEC or EC (Exposure Compensation) control will adjust flash power output level. The Nikon D3 series cameras do not have an FEC adjustment. You can use the EC adjustment on all

Nikon cameras, including the D3 series, whenever a flash power output level adjustment is needed.

Canon Only

Both the camera's ISO and FEC controls will adjust flash power output level. Changes to FEC will adjust flash power output level as shown in the table on the right. Changes from the ISO used for your first picture will adjust flash output power level relative to

FEC. For example, if your first picture was at ISO 200, and you adjusted ISO down to 100, your flash power level would be 1 stop brighter for all FEC settings. This operation assumes PowerTracking is set to Full Manual in the PocketWizard Utility which is the default.

You can use any PocketWizard receiving radios together in the same exposure, including other ControlTL radios. Remember that studio and manual flash output will not be calculated as part of an E-TTL / i-TTL exposure.

This operation assumes PowerTracking is set to Full Manual in the PocketWizard Utility, which is the default.

You can use any PocketWizard receiving radios together in the same exposure, including other ControlTL radios. Remember that studio and manual flash output will not be calculated as part of an E-TTL / i-TTL exposure.

ControlTL® Center Point The center point for all ControlTL operations, including Basic Power Control, PowerTracking, or when using an AC3 ZoneController, is 3 stops down from your flash's maximum. For example, in Basic Power Control this means 0 on your camera's FEC equals 1/8 on your flash and FEC +3 equals 1/1 (full power). This setting may be customized using the PocketWizard Utility under the PowerTracking tab.

Camera FEC Range and Basic Power Control: You can change the center point to better match your camera's FEC range by adjusting the Flash Exposure Compensation control in the PocketWizard Utility for each PowerMC2 or PowerST4. This setting must be configured on each receiving radio.

This setting **must** be configured on each receiving radio. Adjusting it on a transmitting FlexTT5 has no effect on your remote flash's power output level.

Camera FEC Range	Maximum remote power level available using default settings	Minimum remote power level available using default settings	Set each FEC so camera maximum FEC equals flash maximum output power	Set each FEC so camera minimum FEC equals flash minimum output power
Canon +3/ -3	1/1 at FEC +3	1/32 at FEC -2 through -3	0	0
Canon +2/ -2	1/2 at FEC +2	1/32 at FEC -2	+1	0
Nikon +1/ -3	1/4 at FEC +1	1/32 at FEC -2 through -3	+2	-1

Automatic PowerTracking

When Automatic PowerTracking is engaged, any changes to aperture and ISO on your camera are automatically tracked by your remote flash output power to maintain the current exposure level. For example, if you open the aperture on your camera by one stop, then the power output level on your remote flash will decrease by one stop.

To engage Automatic PowerTracking when you are not using an AC3 ZoneController, set the PowerTracking mode to a setting other than Full Manual. This is done in the PocketWizard Utility for your transmitting ControlTL radio only. PowerTracking has several modes of operation available. See the PocketWizard Utility section on adjusting this setting via the PowerTracking Tab for more information.

The following directions are for the PowerTracking mode Center on ISO & Aperture with First Shot.

In this mode, the aperture and ISO as set on the camera for the first exposure will be aligned with the ControlTL center point (3 stops down from your flash's maximum output power). For example if your camera is set to ISO 100 and F:5.6 for its first exposure, then those exposure settings will yield a flash output power of 1/8. See the ControlTL Center Point section for more information.

To set the aperture and ISO values that will be aligned with the ControlTL center point:

- Turn on your camera and transmitting MiniTT1 or FlexTT5, but wait to press your shutter button or take any pictures.
- Set the aperture and ISO you wish to align with the center point. Set the shutter speed as desired, however changes to shutter speed will not affect PowerTracking.
- Press the shutter button to take a picture. The center point is now aligned with your aperture and ISO settings.
- Use your camera's FEC control to get the exposure the way you want it. If you are unable to achieve the exposure you want using this control, try adjusting the Flash Exposure Compensation control in the PocketWizard Utility for each PowerMC2, use a different aperture or ISO, or consider an AC3 ZoneController.
- As you adjust your camera's ISO and aperture, flash power output will automatically track to maintain the current exposure level.

To change the values used for the center point, turn off your transmitter then turn it back on and follow these steps again. See the PowerTracking Tab in the PocketWizard Utility section below for more information.

IMPORTANT NOTE: Shooting in Shutter Priority/Tv, Program, Full Auto, or shooting quickly or making rapid exposure changes is not recommended. The flash values may change rapidly and your remote flash may not be able to keep up. Honor your flash's ready wait time or "dump" as necessary.

Flash Exposure Compensation (FEC) can be set in many places and all values are added together.

FEC can be set:

- On the Power Dials of the AC3 ZoneController
- On the camera for all zones except AC3 Manual zones
- For transmitting radios, the PocketWizard Utility can adjust the PowerTracking center point for ISO and aperture which affects all zones
- For a PowerMC2, PowerST4, or AC9 AlienBees Adapter connected to a FlexTT5, the PocketWizard Utility can adjust FEC for the directly connected flash on the PowerTracking tab

If the combined FEC settings are more or less than your flash's capabilities, then the flash will operate at maximum or minimum output accordingly.

Using an AC3 ZoneController

An AC3 ZoneController on your transmitting ControlTL radio allows you to adjust the remote flash output power for up to 3 zones independently, in either Manual or Automatic modes.

Set the Zone on your receiving ControlTL radio to Zone A, B, or C as desired.

Manual Mode: With an AC3 Zone Switch set to M (Manual), the AC3 Power Dial for that zone sets the absolute flash power output as shown in the table for Basic Power Control. Your camera's FEC/EC, ISO, and aperture controls will not affect the flash output power levels for AC3 zones set to M.

Automatic Mode: With an AC3 Zone Switch set to A (Automatic), Automatic PowerTracking using Center on ISO & Aperture with First Shot is engaged. See the Automatic PowerTracking section for more information. The AC3 Power Dial for a zone sets the flash power output level for that zone relative to the ControlTL center point. Your camera's FEC control can be used to adjust flash output power level for all zones set to A (Auto).

Off: With an AC3 Zone Switch set to Ø (Off), flashes in that zone will not trigger.

Next recommended reading: [High Speed Sync](#)

Contents

- [1 What is HyperSync?](#)
- [2 HyperSync Setup](#)
- [3 When to Use HyperSync](#)
 - [3.1 Freezing Action](#)
 - [3.2 Overpowering the Sun](#)
 - [3.3 More Power](#)
- [4 HyperSync Performance with your Camera](#)

On this page you will find everything you need to know about HyperSync®, and how to make it a valuable tool you can rely on.

In the sections below you will be introduced to the main principles of HyperSync and how you might use it in your own photography. There are links to additional pages with in-depth information explaining how HyperSync works, how to set up your radios for HyperSync, and some example images illustrating the results you can expect.

What is HyperSync?



Garth Milan: "I was using a single Elinchrom Ranger power pack, along with an Elinchrom Ranger (S head, I believe). I only had the one pack and head, as I had to hike quite a ways back for this shoot. And yes, I use the PowerST4."

HyperSync is a feature exclusive to PocketWizard radios that allows you to shoot at speeds faster than your cameras X-sync while using studio strobes.

Unlike HSS/Auto-FP (High Speed Sync) which allows speedlights to sync up to 1/8000th with pulsed light, HyperSync uses precise timing to capture the most flash energy in the frame. You can see real

world examples of HyperSync usage from professional working photographers throughout these pages. You can click on the photos for camera and exposure information. If you are curious about how HyperSync works on a more scientific level, how it differs from HSS, and an in-depth look at how these features work, please visit the following page:

- [Understanding HyperSync and High Speed Sync](#)

HyperSync Setup



Pete Webb: "I used 2 Elinchrom Ranger RX packs, with 'S' heads, with a MiniTT1 on the Canon 5D Mark III and FlexTT5's on the rangers."

HyperSync timing adjustments can only be calculated by our ControlTL line of transmitters ([MiniTT1](#) and [FlexTT5](#)), but can be used by any of our Standard or ControlTL receivers.

Depending on what you are photographing and what equipment you are using there are several different ways to optimize your radios.

To learn how to use the [HyperSync/HSS Tab](#) located in the [PocketWizard Utility](#) to configure your radios for optimal HyperSync performance with your photo equipment, please visit the following page:

- [HyperSync Setup](#)

When to Use HyperSync

HyperSync has been available since just after the introduction of the MiniTT1 and FlexTT5, but we have found that there are still many photographers who don't know how HyperSync can help them. Below are three of the most common uses of/reasons to use HyperSync.

Freezing Action



2 Elinchrom Ranger RX and S heads were used with PowerST4s for this photograph.

The ability to use flash above your camera's [X-Sync](#) (in some cases up to 1/8000th!) allows you to freeze action like never before. With HyperSync you can light fast moving subjects without worrying about motion blur; be it on the sports field, dance floor, or in the studio.

Overpowering the Sun



Olli Krause: "HyperSync is a nice and easy way to get around the X-Sync time of your camera and put the control of the light back into your hands. Shooting with up to 1/8000 sec and a wide open aperture around f/2 is

lots of fun.”

When using HyperSync you can reduce the ambient light apparent in your photograph by using higher shutter speeds, but still achieve sync with studio strobes. This means in bright sunlight you can darken the ambient light in the background. Being able to achieve higher shutter speeds also allows you to use a wider aperture. A wider aperture allows for a shallower depth of field. More control over both the ambient light and the depth of field means more creative control for you in any situation.

More Power



Erik Seo: "Elinchrom Ranger RX AS Speed pack with an A-Head. I was using a FlexTT5 as both a transmitter and receiver. You can see the little flash head cover it was sitting in, bottom right hand side of the big jump wedge. No other lighting was used on that particular photo."

Photographers have been able to reach shutter speeds of 1/8000th with speedlites with HSS/Auto-FP for years, but one of the biggest differences between [HSS and HyperSync](#) is power. Studio strobes are able to provide much more flash power. This gives the option of lighting larger subjects at higher shutter speeds with the flash further away.

HyperSync Performance with your Camera



Canon EOS 7D at 1/6400 F/2.8



Canon EOS 7D at 1/6400 F/11

One of the most common questions we receive about HyperSync is “What kind of results can I get with my gear?” We at PocketWizard have been testing HyperSync performance and recording the outcome of many of the most popular camera and flash combinations. To view the results for your gear select your camera from one of the grids below, and find your lighting system on the subsequent page. If you do not see your combination of camera and flash, check back again soon - we will be adding more combinations in the future.

Please note that white wall performance is presented so you can see the visual effects of the shutter and flash duration. White wall performance is often not representative of what HyperSync can do for your photography in real-world conditions. It is impossible to recreate every real-world situation in a testing environment, and not every photographer’s level of acceptability is the same. Many photographers find the gradient visible on the white wall blends into the environment when shot outside (see example to the left.) Others may correct for the gradient in post-production. Users will want to experiment to see what works best for their individual needs.

You can read more about how to manage clipping and gradation in your images by visiting the page below:

- [Clipping and Gradient.](#)

Canon Camera HyperSync Results

Canon 1D X	Canon 7D	Canon 70D	Canon Rebel T5i (700D)
Canon 1D Mark IV	Canon 6D	Canon 60D	Canon Rebel T5 (1200D)

Canon 1Ds Mark III	Canon 5D Mark III	Canon 50D	Canon Rebel SL1 (650D)
Canon 1D Mark III	Canon 5D Mark II	Canon 40D	Canon Rebel T4i (650D)
Canon 1Ds Mark II	Canon 5D	Canon 30D	Canon Rebel T3i (600D)
Canon 1D Mark II N		Canon 20D	Canon Rebel T3 (110D)
Canon 1D Mark II			Canon Rebel T2i (550D)
			Canon Rebel T1i (500D)
			Canon Rebel XSi (450D)
			Canon Rebel XTi (400D)
			Canon Rebel XT (350D)
			Canon Rebel XS (1000D)

Nikon Camera HyperSync Results

Nikon D4S	Nikon D810	Nikon D7100	Nikon Df
Nikon D4	Nikon D800	Nikon D7000	
Nikon D3x	Nikon D800E	Nikon D5300*	Nikon D90
Nikon D3s	Nikon D700	Nikon D5200*	Nikon D80
Nikon D3	Nikon D610	Nikon D5100*	Nikon D40x*
Nikon D2x	Nikon D600	Nikon D5000*	Nikon D40*
	Nikon D300s	Nikon D3300*	
	Nikon D300	Nikon D3200*	
	Nikon D200	Nikon D3100*	
		Nikon D3000*	

* These cameras do not support HyperSync or HSS/FP-Sync operation: D5300, D5200, D5100, D5000, D3300, D3200, D3100, D3000, D40x, D40

We have paused our HyperSync testing and PDF production for the time being. We may be adding more results to the wiki as they become available. Check back in the future.



This page describes how to configure your PocketWizard radios for using [HyperSync](#) to capture flash above X-sync. This page will provide details on configuring your radios in the [PocketWizard Utility](#) for best HyperSync performance. HyperSync requires at least one [ControlTL](#) radio like the [MiniTT1 and FlexTT5](#) to serve as the transmitter. Receiving radios may be ControlTL radios like the [FlexTT5](#), [PowerMC2](#), or [PowerST4](#), or Standard Channel radios like the [MultiMAX](#), [Plus II](#), [Plus III](#), or [PlusX](#).

To learn what HyperSync is and how it differs from other flash sync techniques, visit the [Understanding HyperSync and High Speed Sync](#) page. For basic information on HyperSync, return to the main [HyperSync](#) page.

Contents

- [1 What HyperSync results can I get with my camera and flash?](#)
- [2 All ControlTL Radios - HyperSync Automation](#)
 - [2.1 How to Configure the ControlTL Transmitter](#)
 - [2.2 How to Configure the Receiving FlexTT5 and AC9 AlienBees Adapter](#)
 - [2.3 How to Configure the Receiving PowerMC2](#)
 - [2.4 How to Configure the Receiving PowerST4](#)
 - [2.5 How to Configure the Receiving FlexTT5 P2 Port](#)
- [3 ControlTL Transmitter, Standard Receiver \(Plus II, Plus III, PlusX, MultiMAX\)](#)
 - [3.1 How to Configure the ControlTL Transmitter - HyperSync Flash Duration For Standard Channels](#)
 - [3.2 How to Configure the ControlTL Transmitter - Manual HyperSync For Standard Channels](#)

What HyperSync results can I get with my camera and flash?

Thankfully, we have done a lot of the work for you by sharing images that we have captured using as many combinations of camera and flash model as possible. Our examples are available below. Simply click on your camera and find the flash that you wish to use with HyperSync. There are countless combinations of flashes and cameras in the world, and we will add more cameras and flashes as time goes by. If you don't see your equipment, feel free to contact us directly:

<http://www.pocketwizard.com/contact/inquiry/>

The results below were produced with the steps detailed on the bottom parts of this page.

Canon Camera HyperSync Results

Canon 1D X	Canon 7D	Canon 70D	Canon Rebel T5i (700D)
Canon 1D Mark IV	Canon 6D	Canon 60D	Canon Rebel T5 (1200D)
Canon 1Ds Mark III	Canon 5D Mark III	Canon 50D	Canon Rebel SL1 (650D)
Canon 1D Mark III	Canon 5D Mark II	Canon 40D	Canon Rebel T4i (650D)
Canon 1Ds Mark II	Canon 5D	Canon 30D	Canon Rebel T3i (600D)
Canon 1D Mark II N		Canon 20D	Canon Rebel T3 (110D)
Canon 1D Mark II			Canon Rebel T2i (550D)
			Canon Rebel T1i (500D)
			Canon Rebel XSi (450D)
			Canon Rebel XTi (400D)
			Canon Rebel XT (350D)
			Canon Rebel XS (1000D)

Nikon Camera HyperSync Results

Nikon D4S	Nikon D810	Nikon D7100	Nikon Df
Nikon D4	Nikon D800	Nikon D7000	
Nikon D3x	Nikon D800E	Nikon D5300*	Nikon D90
Nikon D3s	Nikon D700	Nikon D5200*	Nikon D80
Nikon D3	Nikon D610	Nikon D5100*	Nikon D40x*
Nikon D2x	Nikon D600	Nikon D5000*	Nikon D40*
	Nikon D300s	Nikon D3300*	
	Nikon D300	Nikon D3200*	
	Nikon D200	Nikon D3100*	
		Nikon D3000*	

* These cameras do not support HyperSync or HSS/FP-Sync operation: D5300, D5200, D5100, D5000, D3300, D3200, D3100, D3000, D40x, D40

We have paused our HyperSync testing and PDF production for the time being. We may be adding more results to the wiki as they become available. Check back in the future.

All ControlTL Radios - HyperSync Automation

Performing [HyperSync](#) is easiest with all [ControlTL](#) radios, transmitter and receivers. Non-ControlTL receivers (Standard Channel radios) do not have the benefit of HyperSync Automation, and require more manual adjustment for best results. While default HyperSync settings for ControlTL radios will usually provide great results, they may also be reconfigured by the photographer. First configure your transmitting [MiniTT1 or FlexTT5](#), and then your receiving PocketWizard radio. Steps for configuring your ControlTL transmitter and receiver are detailed below.

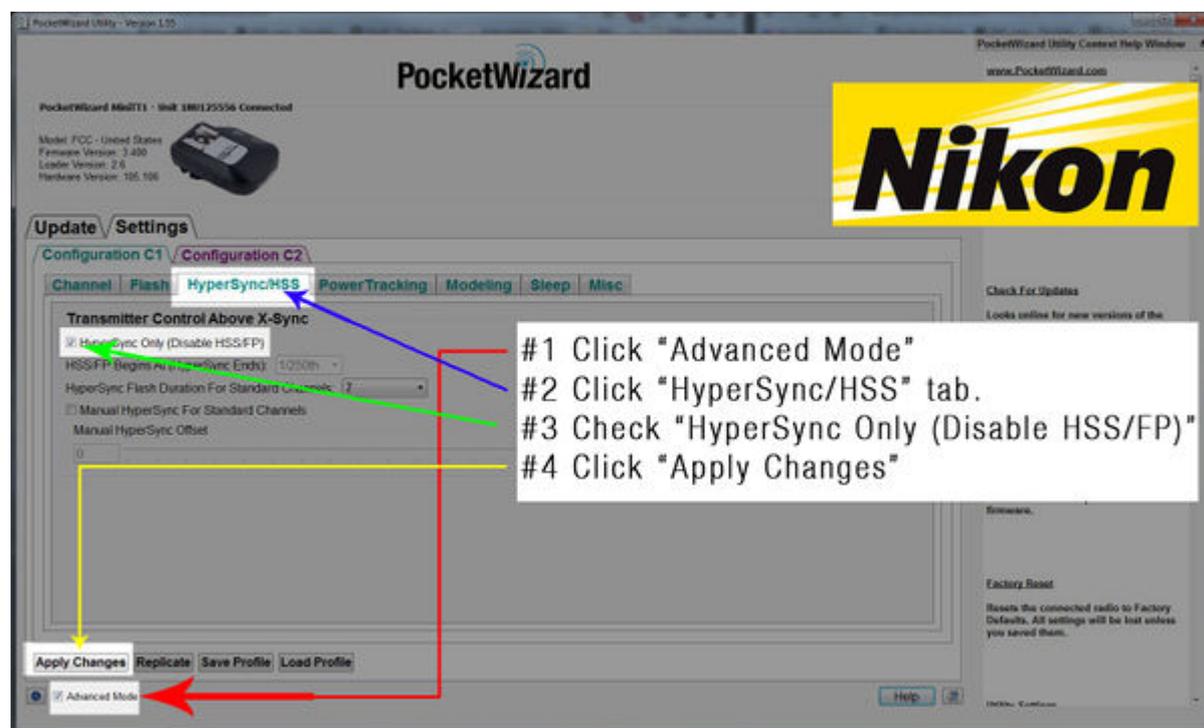
How to Configure the ControlTL Transmitter

When using a [MiniTT1 or FlexTT5](#) as a transmitter to perform [HyperSync](#), follow these steps to configure your radio. Be sure the "Advanced Mode" box in the bottom left corner of the Utility is checked.

For Nikon users:

For the most consistent results and most flash energy in frame with Nikon radios, it is highly recommended that you enable "[HyperSync Only](#):"

1. Connect your transmitting MiniTT1/FlexTT5 to the [PocketWizard Utility](#) via USB, and check the "Advanced Mode" box
2. Navigate to the "[HyperSync/HSS](#)" tab
3. Enable "HyperSync Only"
4. Click "Apply Changes"



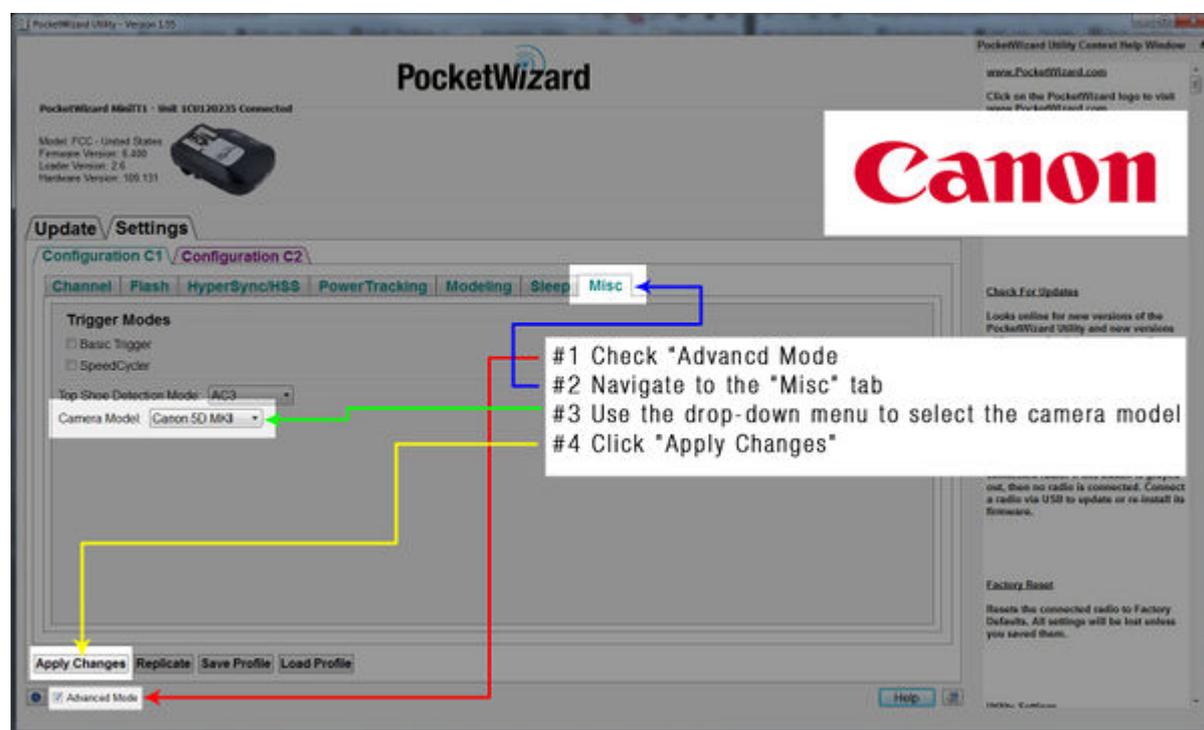
NOTE: If you are a Nikon user with ControlTL receivers, and the "HyperSync Only" control is left at

its default (disabled) less flash energy will be captured in frame and HyperSync will not be able to optimize flash timing. If you are a Nikon user attempting to use HyperSync with Standard Channel receivers (like the [Plus II](#), [Plus III](#), [PlusX](#), or [MultiMAX](#)), you must enable "HyperSync Only." Please read the section [ControlTL Transmitter, Standard Receiver](#), below, for more information.

For Canon users:

For best performance with Canon radios, it is highly recommended that you manually select your camera model:

1. Connect your transmitting MiniTT1/FlexTT5 to the [PocketWizard Utility](#) via USB and check the "Advanced Mode" box
2. Navigate to the "[Misc](#)" tab
3. Use the drop-down menu to select the camera model
4. Click "Apply Changes"



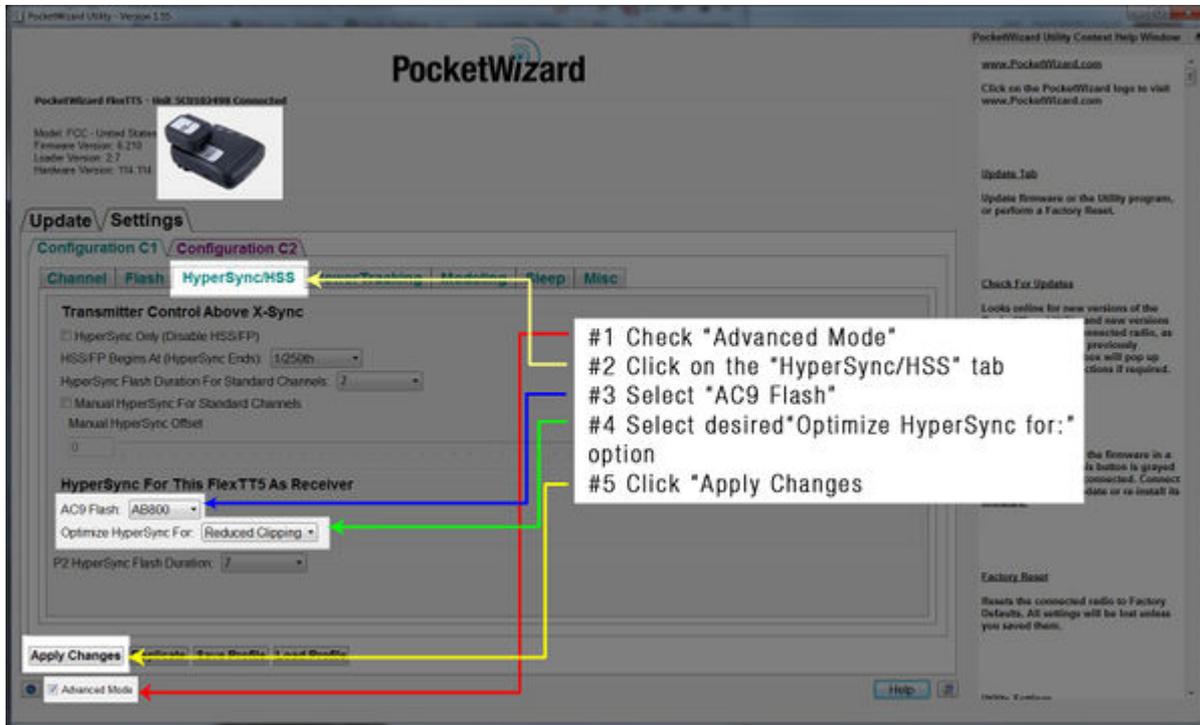
NOTE: If you are a Canon user attempting to use HyperSync with Standard Channel receivers (like the [Plus II](#), [Plus III](#), [PlusX](#), or [MultiMAX](#)), you must enable "HyperSync Only." Please read the section [ControlTL Transmitter, Standard Receiver](#), below, for more information.

How to Configure the Receiving FlexTT5 and AC9 AlienBees Adapter

When using a Canon or Nikon FlexTT5 with an attached [AC9 AlienBees Adapter](#) as your receiver, follow these steps to configure your radio:

1. Connect your receiving FlexTT5 to the [PocketWizard Utility](#) via USB and make sure that the "Advanced Mode" box is checked

2. Navigate to the "[HyperSync/HSS](#)" tab and select the flash connected to the AC9 AlienBees Adapter using the "AC9 Flash" dropdown menu
3. Set "[Optimize HyperSync Automation For:](#)" to either "[Reduced Clipping](#)" or "[Highest Energy](#)" (default = "Reduced Clipping")
4. Click "Apply Changes"
5. Connect the receiving FlexTT5 and AC9 AlienBees Adapter to the flash



This video shows you how to set up your transmitter and receiver for HyperSync for the Nikon system of radios.

This video shows you how to set up your transmitter and receiver for HyperSync for the Canon system of radios.

HyperSync Automation is currently implemented for the following Paul C. Buff flashes and AC9 Adapter:

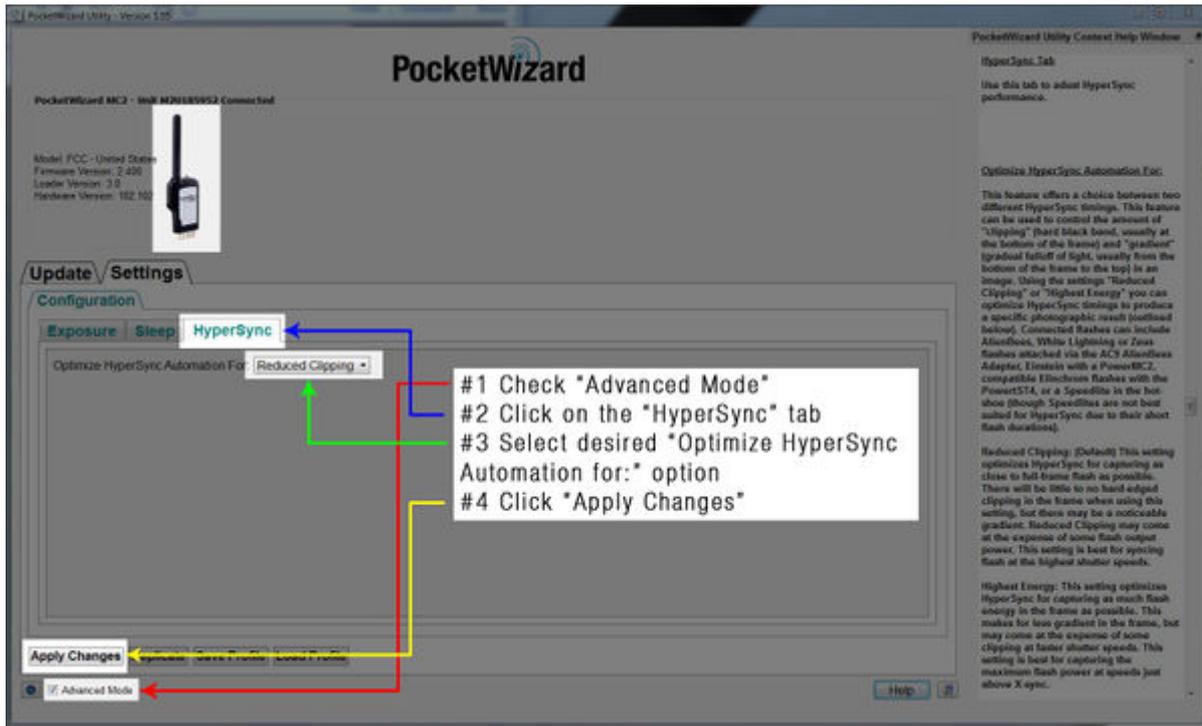
AlienBees AB400	White Lightning X800	Zeus 1250
AlienBees AB800	White Lightning X1600	
AlienBees AB1600	White Lightning X3200	
AlienBees ABR800 RingFlash	White Lightning Ultra1200	

If you wish to use a flash that does not appear on the list above with an AC9 AlienBees Adapter, try selecting a flash of a similar power output.

How to Configure the Receiving PowerMC2

When using a [PowerMC2](#) as your receiver, follow these steps to configure your radio:

1. Connect your PowerMC2 to the [PocketWizard Utility](#) via USB, and make sure that the "Advanced Mode" box is checked
2. Navigate to "[Optimize HyperSync Automation For:](#)" on the "[HyperSync](#)" tab; choose "[Reduced Clipping](#)" or "[Highest Energy](#)"
3. Click "Apply Changes"
4. Connect the PowerMC2 to the flash



This video shows you how to set up your transmitter and receiver for HyperSync for the Nikon system of radios.

This video shows you how to set up your transmitter and receiver for HyperSync for the Canon system of radios.

HyperSync Automation with the PowerMC2 is intended for use with the Einstein E640 flash. Using the Einstein's "Color" mode will provide the best results. The E640 only provides its best HyperSync results when set to full power (+3 on the [AC3 ZoneController](#) or master Speedlite). Due to its IGBT design, settings lower than full power may result in clipping.

You can read more about this behavior on the [IGBT-controlled flashes vs. Voltage-controlled flashes](#) page.

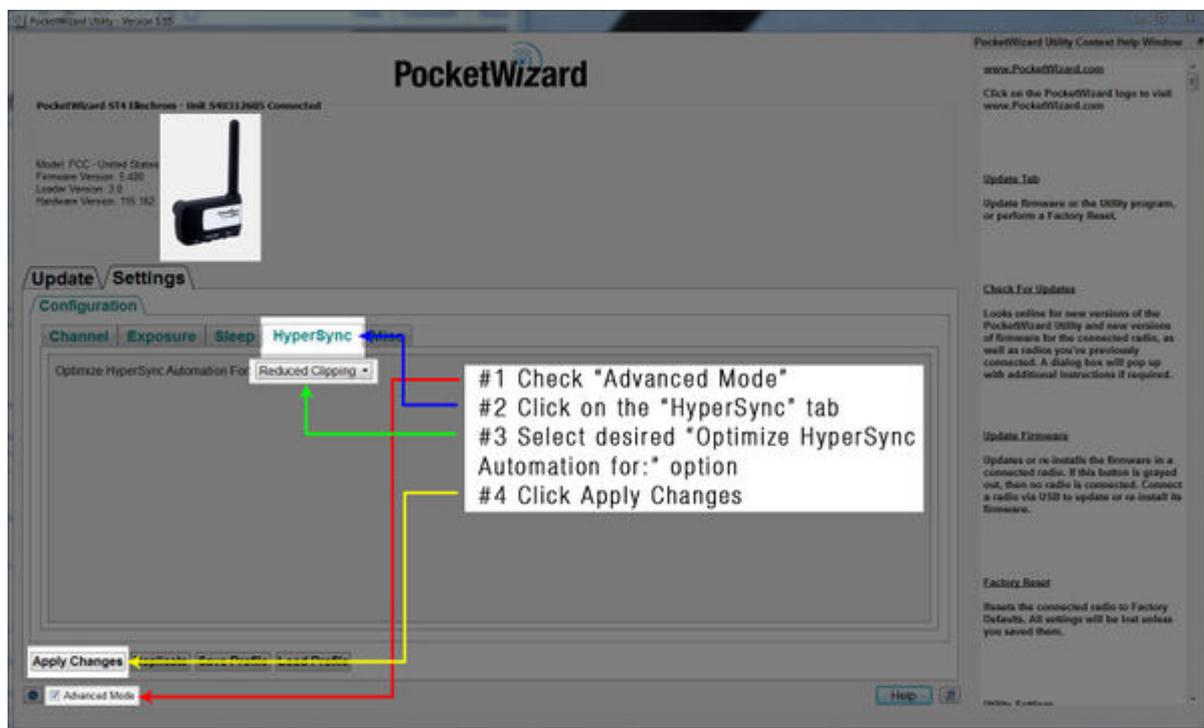
Before you connect a PowerMC2 to the PocketWizard Utility via USB, make sure to disconnect the radio from the Einstein flash. Failure to disconnect the PowerMC2 from the flash before connecting

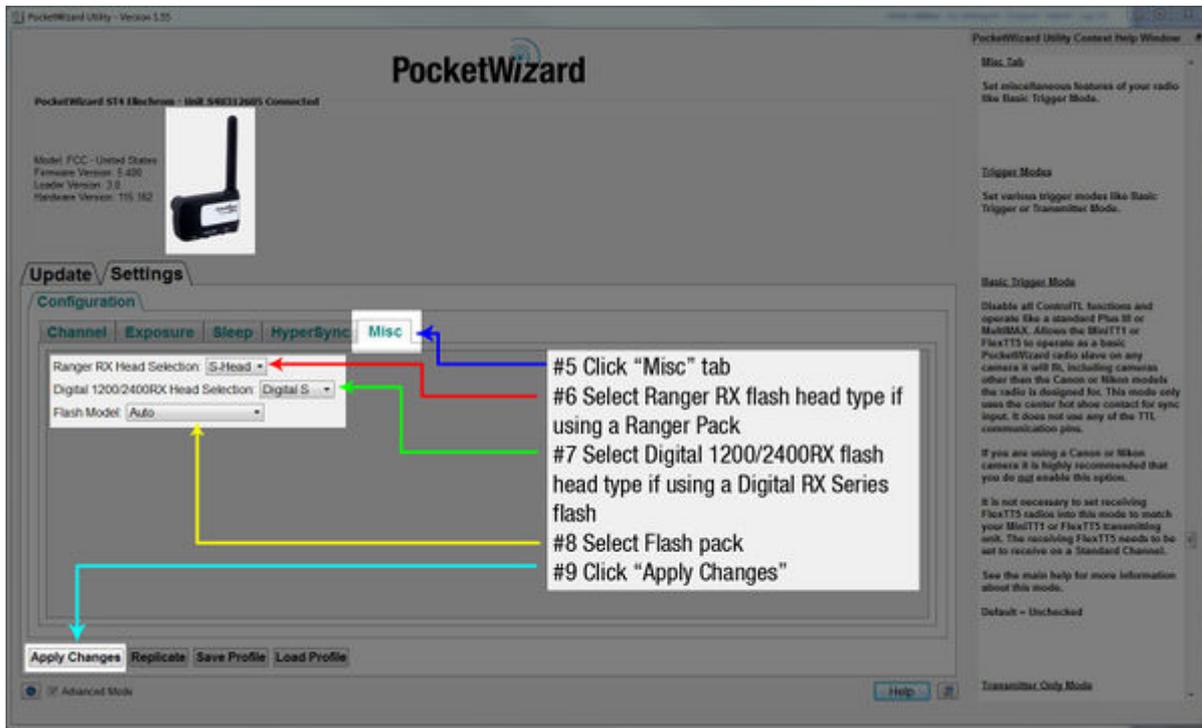
it to the Utility could result in damage to the radio.

How to Configure the Receiving PowerST4

When using a [PowerST4](#) as your receiver, follow these steps to configure your radio:

1. Connect your PowerST4 to the [PocketWizard Utility](#) via USB, and make sure that the "Advanced Mode" box is checked
2. Navigate to "[Optimize HyperSync Automation For:](#)" on the "[HyperSync](#)" tab; choose "[Reduced Clipping](#)" or "[Highest Energy](#)"
3. Navigate to the [Misc Tab](#) and select [S-head or A-head](#) if you have a Ranger RX, or [select your Digital RX series head](#) if you're using a Digital 1200 or 2400 pack.
4. Select [your flash model](#) as well.
5. Click "Apply Changes"
6. Connect the PowerST4 to the flash or pack





This video shows you how to set up your transmitter and receiver for HyperSync for the Nikon system of radios.

This video shows you how to set up your transmitter and receiver for HyperSync for the Canon system of radios.

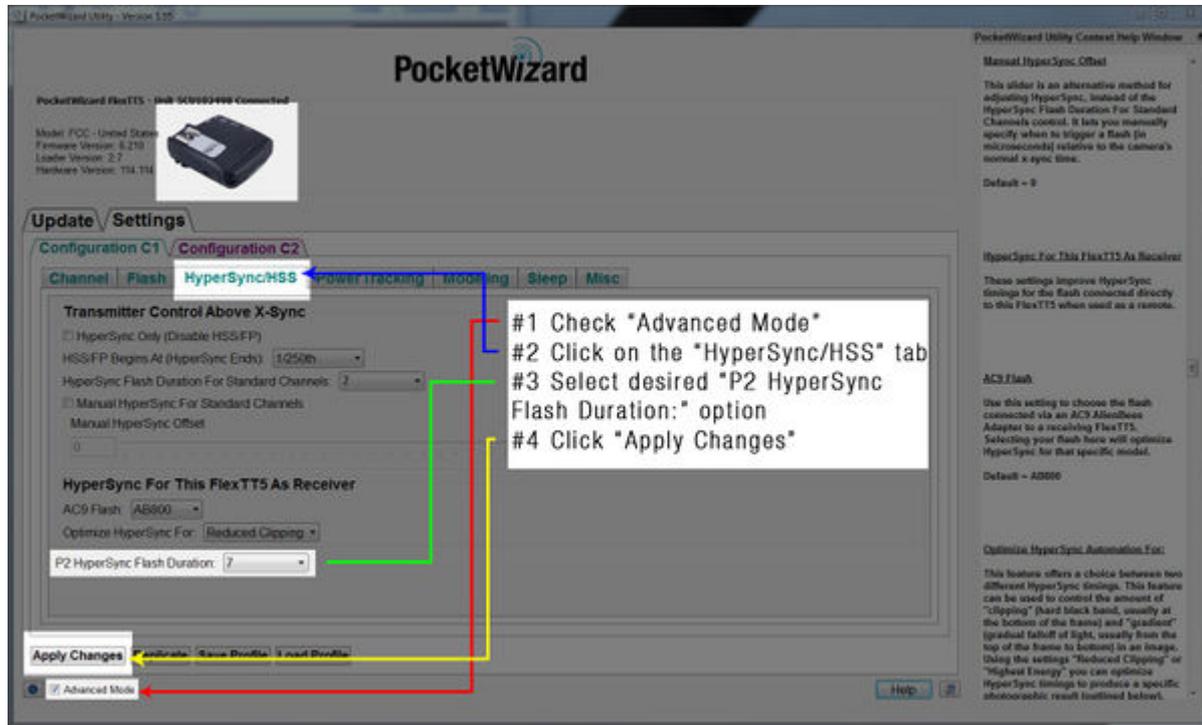
HyperSync Automation is currently implemented for the following Elinchrom flashes and PowerST4:

Style 300RX	Digital 1200RX or Digital 2400RX with Digital S Head	Ranger RX with Ranger S Head
Style 600RX	Digital 1200RX or Digital 2400RX with Digital SE Head	Ranger RX with Ranger A Head
Style 1200RX	Digital 1200RX or Digital 2400RX with Mini A Head	Ranger RX Speed with Ranger S Head
	Digital 1200RX or Digital 2400RX with Mini S Head	Ranger RX Speed with Ranger A Head
	Digital 1200RX or Digital 2400RX with A3000 Head	Ranger RX Speed A/s with Ranger S Head
	Digital 1200RX or Digital 2400RX with A6000 Head	Ranger RX Speed A/s with Ranger A Head

How to Configure the Receiving FlexTT5 P2 Port

When using a FlexTT5 as your receiver connected to a flash via the P2 port, follow these steps to configure your radio:

1. Connect your receiving FlexTT5 to the [PocketWizard Utility](#) via USB, and make sure that the "Advanced Mode" box is checked
2. Navigate to the "[HyperSync/HSS](#)" tab; use the "[P2 HyperSync Flash Duration](#)" drop-down to select a timing setting - 10 is often a good starting-point
3. Click "Apply Changes"
4. Connect the FlexTT5 to the flash or pack via the P2 port and appropriate cable



If you notice clipping in frame, choose a different "P2 HyperSync Flash Duration" value - if you have a smaller flash or Speedlite connected via the P2 port, start by testing with lower numbers, if you have a studio strobe or larger flash, you will likely see the best results with higher numbers

ControlTL Transmitter, Standard Receiver (Plus II, Plus III, PlusX, MultiMAX)

Performing [HyperSync](#) is possible with a [ControlTL](#) transmitter and Standard Channel receivers like the [MultiMAX](#), [Plus II](#), [Plus III](#), or [PlusX](#).

Only ControlTL radios have HyperSync settings that can be adjusted. When using Standard Channel radios as receivers, all HyperSync settings or offsets will need to be manipulated on the transmitter. The Standard Channel receivers need only be set to use the correct channel and then connected to the remote flashes. The transmitting [MiniTT1](#) or [FlexTT5](#) can account for the flash duration of remote flashes in one of two ways, "[HyperSync Flash Duration For Standard Channels](#)" or "[Manual HyperSync For Standard Channels](#)." Find more information on these options on the [HyperSync/HSS Tab](#) page.

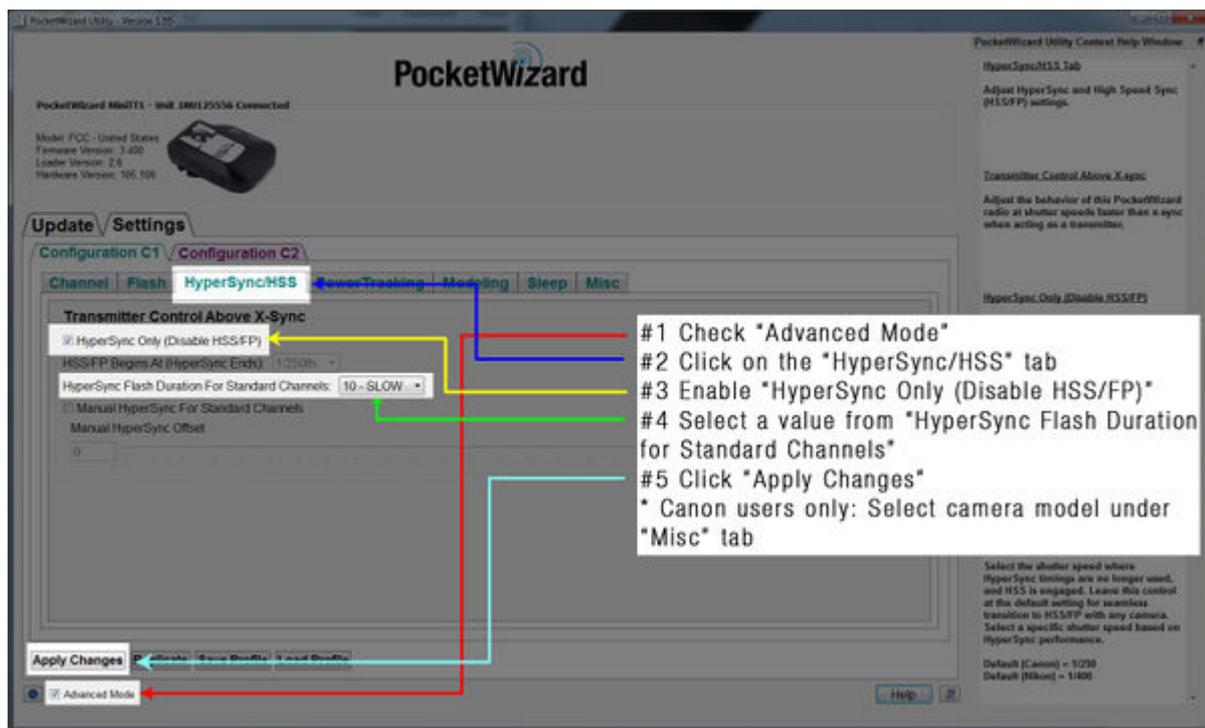
When using a mix of ControlTL and Standard Channel radios to perform HyperSync, determine

whether you would like to use “HyperSync Flash Duration For Standard Channels” or “Manual HyperSync For Standard Channels.” and follow the instructions below.

How to Configure the ControlTL Transmitter - HyperSync Flash Duration For Standard Channels

Follow these steps to configure your ControlTL transmitter using [HyperSync Flash Duration For Standard Channels](#):

1. Connect your transmitting [MiniTT1 or FlexTT5](#) to the [PocketWizard Utility](#) via USB and make sure that the “Advanced Mode” box is checked
2. Navigate to the "[HyperSync/HSS](#)" tab
3. Enable “[HyperSync Only](#)”
4. Select a value 1-10 for the “HyperSync Flash Duration for Standard Channels” - 10 is often a good starting-point
5. **Canon users only:** Navigate to the “[Channel](#)” tab and manually select your camera model
6. Click "Apply Changes"



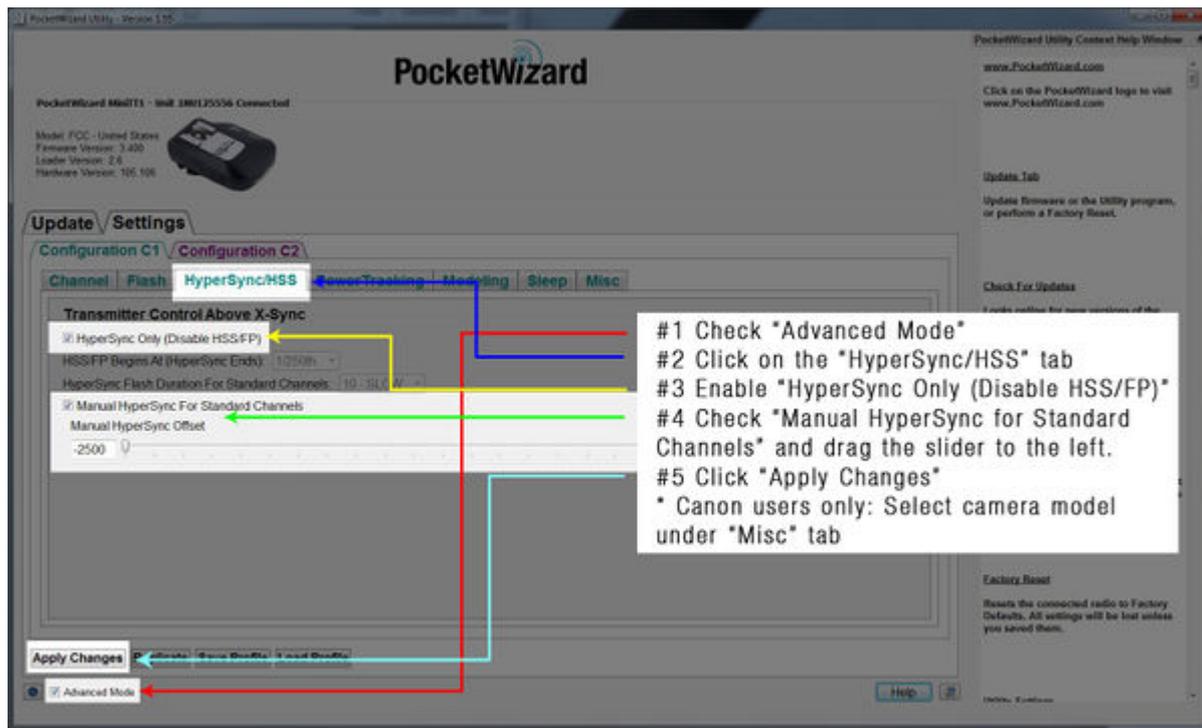
If you notice clipping in frame, choose a different “HyperSync Flash Duration for Standard Channels” value - some experimentation may be necessary to find the best setting for your camera and flash combination

How to Configure the ControlTL Transmitter - Manual HyperSync For Standard Channels

Follow these steps to configure your ControlTL transmitter using [Manual HyperSync For Standard](#)

Channels:

1. Connect your transmitting [MiniTT1 or FlexTT5](#) to the [PocketWizard Utility](#) via USB and make sure that the "Advanced Mode" box is checked
2. Navigate to the "[HyperSync/HSS](#)" tab
3. Enable "[HyperSync Only](#)"
4. Enable "Manual HyperSync For Standard Channels" by clicking the check-box
5. Use the slider to set a Manual HyperSync Offset - the greatest offset (all the way to the left) is often a good starting point
6. Canon users only: Navigate to the "[Channel](#)" tab and manually select your camera
7. Click "Apply Changes"



If you notice clipping in frame, choose a different Manual HyperSync Offset value - typically the maximum offset (slider all the way to the left) works well as a starting point. Not all cameras can use the full range of this setting. Some cameras will show no change beyond certain offset value. This is a limitation of the camera. Some experimentation may be necessary to find the best setting for your camera and flash combination

Next recommended reading: [HyperSync](#)

This section describes how HyperSync and High Speed Sync work at a basic level. Read the [HyperSync Setup](#) page for more detailed information on how to adjust HyperSync for your configuration.

Contents

- [1 What HyperSync results can I get with my camera and flash?](#)
- [2 How Does a Flash Work?](#)
- [3 How Does a Shutter Work?](#)
- [4 X-sync - Flash behavior with normal sync limits](#)
 - [4.1 A flash directly connected to a camera](#)
- [5 High Speed Sync](#)
- [6 HyperSync](#)
 - [6.1 Reduced Clipping](#)
 - [6.2 Highest Energy](#)
 - [6.3 Factors to consider](#)
 - [6.3.1 Flash Duration](#)
 - [6.3.2 Power Level](#)
 - [6.3.3 Use with IGBT-controlled strobes](#)
 - [6.3.4 Camera Choice](#)

When shooting with flash, there are different methods of synchronizing the flash with a camera's shutter. These methods depend primarily on the shutter speed and flashes you use.

While the flash appears instantaneous to our eyes, it actually has duration and variance. These are important to the camera's sensor, especially at faster shutter speeds.

At shutter speeds slower than X-sync, usually 1/200 or slower, a normal flash of light is all that is required; the first curtain of the shutter opens, the flash fires for its flash duration, and the second curtain of the shutter closes.

At shutter speeds faster than X-sync (usually 1/250 through 1/8000) the time between the shutter's first curtain opening and second curtain closing is not long enough for a normal flash of light to complete its duration. At the fastest shutter speeds, the shutter's curtains are moving at the same time, exposing a moving slit of light across the sensor. At these shutter speeds, other flash techniques must be used.

High Speed Sync (HSS or Auto-FP sync) begins pulsing the flash before the first curtain opens and continues to pulse it until after the second curtain closes. From the camera's perspective this pulsed light appears as continuous light during the exposure. HSS uses a lot of energy, however, which means there is less light available for the image, and is usually only available in lower powered Speedlites/Speedlights. Syncing up to 1/8000 is possible, but the flash must be very close to the subject.

HyperSync uses a normal flash of light, which has much more energy in it compared to pulsed HSS. HyperSync also uses precision timing to align the flash's duration and output curve with the moving shutter curtains. This allows more light in the image than HSS can provide, and works with higher powered flashes like studio flash packs and monolights. Different flash and camera combinations yield different shutter speed and light output performance, but most combinations will get worthwhile benefits using HyperSync.

Other techniques, like the "HSS Hack" (with or without a manually dialed in delay), can sometimes get a normal flash of light from a studio pack into an exposure taken at faster shutter speeds, but these methods are less precise than HyperSync, lack automation, and are more limited to which camera and flash combinations yield usable results.

What HyperSync results can I get with my camera and flash?

Thankfully, we have done a lot of the work for you by sharing images that we have captured using as many combinations of camera and flash model as possible. Our examples are available below. Simply click on your camera and find the flash that you wish to use with HyperSync. There are countless combinations of flashes and cameras in the world, and we will add more cameras and flashes as time goes by. If you don't see your equipment, feel free to contact us directly:

<http://www.pocketwizard.com/contact/inquiry/>

Canon Camera HyperSync Results

Canon 1D X	Canon 7D	Canon 70D	Canon Rebel T5i (700D)
Canon 1D Mark IV	Canon 6D	Canon 60D	Canon Rebel T5 (1200D)
Canon 1Ds Mark III	Canon 5D Mark III	Canon 50D	Canon Rebel SL1 (650D)
Canon 1D Mark III	Canon 5D Mark II	Canon 40D	Canon Rebel T4i (650D)
Canon 1Ds Mark II	Canon 5D	Canon 30D	Canon Rebel T3i (600D)
Canon 1D Mark II N		Canon 20D	Canon Rebel T3 (110D)
Canon 1D Mark II			Canon Rebel T2i (550D)
			Canon Rebel T1i (500D)
			Canon Rebel XSi (450D)
			Canon Rebel XTi (400D)
			Canon Rebel XT (350D)
			Canon Rebel XS (1000D)

Nikon Camera HyperSync Results

Nikon D4S	Nikon D810	Nikon D7100	Nikon Df
Nikon D4	Nikon D800	Nikon D7000	
Nikon D3x	Nikon D800E	Nikon D5300*	Nikon D90
Nikon D3s	Nikon D700	Nikon D5200*	Nikon D80
Nikon D3	Nikon D610	Nikon D5100*	Nikon D40x*
Nikon D2x	Nikon D600	Nikon D5000*	Nikon D40*
	Nikon D300s	Nikon D3300*	
	Nikon D300	Nikon D3200*	
	Nikon D200	Nikon D3100*	
		Nikon D3000*	

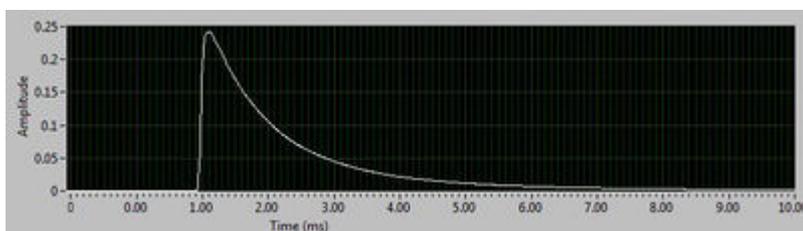
* These cameras do not support HyperSync or HSS/FP-Sync operation: D5300, D5200, D5100, D5000, D3300, D3200, D3100, D3000, D40x, D40

Read the [HyperSync Setup](#) page for more detailed information on how to adjust HyperSync.

We have paused our HyperSync testing and PDF production for the time being. We may be adding more results to the wiki as they become available. Check back in the future.

How Does a Flash Work?

A flash is designed to emit a very intense light for a short duration of time. This is done by filling a flashtube with xenon gas, and then using a charged capacitor to energize the xenon with a very high amount of electrical current. This produces the light that flashes use to illuminate a scene. You can visualize a single flash event as “light over time,” plotted as a curve. The peak has the highest amount of energy emitted but energy continues to be emitted at a decreasing rate so long as the xenon gas is energized. This drop in energy (and therefore light output) creates the “tail” of the curve.



Typical flash duration simulation - Ranger RX pack with the S head at full power

While appearing to be instantly turned on and instantly turned off again, a flashtube can be excited for anywhere from 1 microsecond to tens of milliseconds. Most consumer flashes usually average around 1 millisecond, with some being longer, and some being shorter.

How Does a Shutter Work?

A camera's shutter has two curtains that cover the sensor. When you press the shutter button, the first curtain moves, exposing the sensor. Next, the second curtain moves, finishing the exposure. Your first curtain opens all the way before the second curtain starts to move. This fully exposes the camera's sensor. Your camera has a limit where it can fully open its shutter and capture a normal flash duration across the entire exposure all at once. This is your camera's X-sync limit.



A simulated shutter at X-sync

Shutter speeds above X-sync act differently. The first curtain begins to move downwards. Before they reach the bottom, the second curtain begins to move. This creates a moving slit.



A simulated shutter above X-sync]

The faster the shutter speed, the smaller the slit:



Faster shutter speeds have smaller slits

X-sync - Flash behavior with normal sync limits

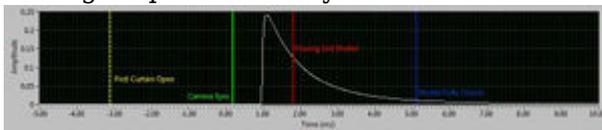
A flash directly connected to a camera

Your camera has a limit where it can fully open its shutter and capture flash across the entire sensor all at once. This is your camera's X-sync limit.

A camera triggering a flash at X-sync follows this timeline:

1. The shutter button is pressed.
2. Several milliseconds of time pass. This is called lag time. The amount of lag time varies from camera to camera.
3. The first curtain moves from the top of the sensor to the bottom. The camera's sensor is exposed.
4. Some microseconds of time pass. The camera triggers its PC terminal and the center sync pin on the hot shoe.
5. The flash emits light for its flash duration. The time this happens can be any amount of time up to a few milliseconds.
6. The second curtain moves from the top of the sensor to the bottom.
7. The second curtain in the camera closes and both curtains reset to the top of the sensor

- Timing Sequence at X-sync



Shutter Sequence at X-sync

-

Ranger RX (S Head) at full power, 5D Mark II 1/200th f/22. This is a photo of a white wall to demonstrate no clipping or gradation.

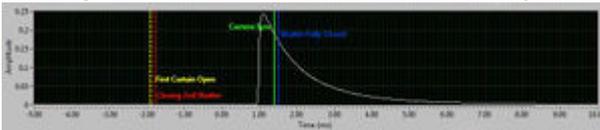
Shutter speeds above X-sync work differently. A camera triggering a flash above X-sync follows this timeline:

1. The shutter button is pressed.
2. Several milliseconds of time pass. This is called lag time. The amount of lag time varies from camera to camera.
3. The first curtain begins expose the sensor as it moves from top to bottom.
4. Before the first curtain reaches the bottom of the sensor, the second curtain begins to move. The space between the first and second curtain is a small slit that moves across the sensor. The faster your shutter speed, the smaller the slit becomes.
5. The first curtain reaches the bottom of the sensor.
6. The camera triggers its PC terminal and the center sync pin on the hot shoe. (Many cameras do not provide this sync output above X-sync.)

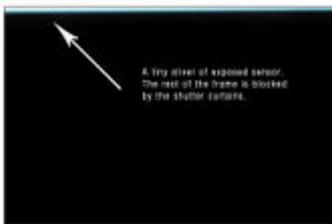
7. The flash emits light for its flash duration. The time this happens can be any amount of time up to a few milliseconds.
8. The moving slit is exposed to the flash.
9. The second curtain in the camera closes and both curtains reset to the top of the sensor

When a camera connected directly to a flash via sync cable is used above X-sync the second curtain blocks part of the sensor from being exposed to light. This shows up as a black band, or clipping.

- Timing Sequence at 1/8000th With a Sync Cord



border|Sync Cord Timing Sequence at 1/8000th



Ranger RX (S Head) at full power, 5D Mark II 1/8000th f/22. This photo shows a tiny sliver of white flash exposure at the top, while the rest of the sensor has been blocked by the second curtain.

The timing sequence has tighter tolerances at X-sync compared to slower speeds. This tighter tolerance and the radio processing delay moves the moment the sensor sees the flash. Since the second curtain has started to move a small bit, on a very small number of cameras you get shadowing or clipping in your exposure. Flashes with long durations can show clipping at X-sync. Cameras with slow shutters can show clipping at X-sync. To get rid of clipping, you may have to use a slower shutter speed.

The PlusX, Plus III, or MultiMAX have a mode to reduce this delay, called [Transmit Only](#). A receiving Plus III can use [FAST mode](#) to reduce processing time.

High Speed Sync

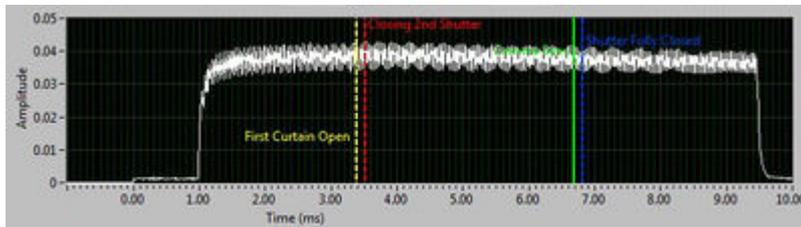
High Speed Sync (HSS) is a Canon technique for syncing flash above X-sync. HSS is called Auto-FP in the Nikon system. This is a speedlight-only technique that pulses light above X-sync. This appears to the camera as a continuous light at faster shutter speeds.

A camera and flash using HSS/Auto-FP follow this timeline:

1. The shutter button is pressed.
2. Several milliseconds of time pass. This is called lag time. The amount of lag time varies from camera to camera.
3. The speedlight begins to pulse light just before the first curtain begins to move.
4. The first curtain begins to move from the top of the sensor to the bottom.
5. The camera's sensor is exposed.
6. Before the first curtain reaches the bottom of the sensor, the second curtain begins to move. The

space between the first and second curtain is a small slit that moves across the sensor. The faster your shutter speed, the smaller the slit becomes.

7. The speedlight continues to pulse.
8. The first curtain reaches the bottom of the sensor.
9. The second curtain in the camera closes and both curtains reset to the top of the sensor.
10. The speedlight stops pulsing.



600EX-RT's HSS Performance at 1/8000th in a 1D Mark III's shoe without any radios

HSS/Auto FP requires a speedlight. Studio strobes are not capable of pulsing light. HSS requires special timing information from the camera. This information is communicated through the TTL pins of a camera's hot shoe. A normal studio flash cannot perform the light pulse technique.

HSS exposures will not be as bright as standard single-pop flashes, because the available energy is divided among all the pulses over exposure time. The pulsed light requires more energy than non-pulsed flash. Flashes using HSS may need to be positioned closer to a subject.

HyperSync

A normal, non-HSS flash is more efficient at delivering light to a subject than an HSS (pulsed) flash. As a result, flashes may be positioned farther from a subject.

HyperSync uses special camera communication to trigger a normal flash before the first curtain opens. It can also eliminate the delay introduced by a typical radio trigger. The timing can be optimized for some flashes based on the user's wishes.

A camera triggering a flash with HyperSync follows this timeline:

1. The shutter button is pressed.
2. Several milliseconds of time pass. This is called lag time. The amount of lag time varies from camera to camera.
3. The attached MiniTT1 or FlexTT5 senses exactly when the shutter will fire, and then fires the flash early.
4. The first curtain begins to move from the top of the sensor to the bottom.
5. The camera's sensor is exposed.
6. Before the first curtain reaches the bottom of the sensor, the second curtain begins to move. The space between the first and second curtain is a small slit. The faster the shutter speed is set the smaller the slit will become.
7. The first curtain reaches the bottom of the sensor.
8. The camera triggers its PC terminal and the center sync pin on the hot shoe.

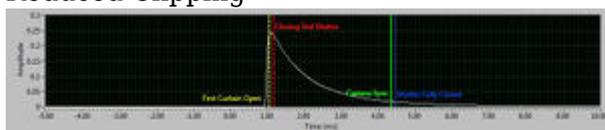
HyperSync requires a ControlTL transmitter like the [Nikon MiniTT1 and FlexTT5](#) or [Canon MiniTT1 and FlexTT5](#). Optimizing HyperSync Automation require a ControlTL receiver like the [PowerMC2](#), [PowerST4](#), or [AC9 AlienBees Adapter](#). All transmitter HyperSync adjustments are made in the [PocketWizard Utility](#) on the [HyperSync/HSS Tab](#). Any PocketWizard radio can be used as a receiver and be triggered from the ControlTL transmitter's HyperSync timing. You will see the best results using a ControlTL receiver.

There are two methods of using HyperSync Automation available on a ControlTL receiver: [Reduced Clipping](#) and [Highest Energy](#). The two methods choose different flash firing times relative to the camera's shutters opening.

Reduced Clipping

Reduced Clipping attempts to keep bottom frame clipping out of your images. Reduced Clipping may result in a gradient across the image. Gradation means the photo is lighter at the bottom and darker at the top. The results are very usable in many situations.

- Reduced Clipping



HyperSync Offset for "Reduced Clipping"



Ranger RX (S Head) at full power, 5D Mark II 1/8000th f/22

Reduced Clipping benefits photographers:

- Shooting outdoors where the sky is a major factor in the top part of the image
- Using aperture priority in conditions that cause the shutter speed to go above X-sync
- In any situation where the full frame must be used and cropping is not an option

"Reduced Clipping" is selected on the ControlTL receiver, as shown in on the [All ControlTL Radios - HyperSync Automation](#) page. This is the factory default setting.

- You can achieve similar results to [Reduced Clipping manually](#) with a non-ControlTL compatible flash by following the directions for the [FlexTT5 P2 Port](#) and trying to eliminate clipping at your **highest** shutter speeds.
- You can achieve similar results to [Reduced Clipping manually](#) with a radio receiving on a [Standard Channel](#) (meaning a ([Plus II](#), [Plus III](#), [PlusX](#), [MultiMAX](#), [FlexTT5 in Basic Trigger Mode](#)), or internal PocketWizard receiver built in to your flash.) This is done by following the directions for the [How to Configure the ControlTL Transmitter - HyperSync Flash Duration For Standard Channels](#) section, and trying to eliminate clipping at your **highest** shutter speeds.

Note: Using Speedlites or the Einstein E-640 for HyperSync with HyperSync is most effective at full power with these flashes because of their IGBT design. HSS/Auto-FP is suggested for users shooting above X-sync with Speedlites. You can read more about IGBT designed flashes here:

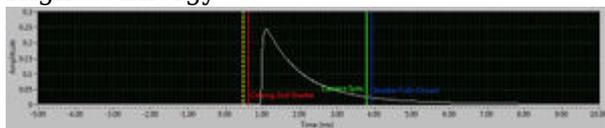
<http://www.paulcuff.com/sfe-flashduration.php>

Read the [HyperSync Setup](#) page for more detailed information on how to adjust HyperSync.

Highest Energy

Highest Energy attempts to get as much flash energy into the image as possible. This will reduce gradation at lower HyperSync speeds, however it can result in black bars or clipping in the frame at the highest shutter speeds. For many situations this can yield useful results as clipping can be cropped out of the image, or the clipping area is exposed by ambient light primarily.

- Highest Energy



HyperSync Offset for "Highest Energy"



Highest Energy benefits photographers:

- Using HyperSync speeds just above X-sync
- Who need as much action stopping flash power in the image as possible (remember that for HyperSync, longer flash durations are better)
- Where gradation is not acceptable
- In any situation where cropping is an option

"Highest Energy" is selected on the ControlTL receiver, as shown on the [All ControlTL Radios - HyperSync Automation](#) page.

- You can achieve similar results to [Highest Energy](#) **manually** with a non-ControlTL compatible flash by following the directions for the [FlexTT5 P2 Port](#) and trying to eliminate clipping at **lower** HyperSync speeds without "clipping" visible at the bottom of your frame.
- You can achieve similar results to [Highest Energy](#) HyperSync **manually** with a radio receiving on a [Standard Channel](#) (meaning a ([Plus II](#), [Plus III](#), [PlusX](#), [MultiMAX](#), [FlexTT5 in Basic Trigger Mode](#)), or internal PocketWizard receiver built in to your flash.) This is done by following the directions for the [How to Configure the ControlTL Transmitter - HyperSync Flash Duration For Standard](#)

[Channels](#) section, and trying to eliminate clipping at your **lower** HyperSync speeds without "clipping" visible at the bottom of your frame.

Note: Using Speedlites or the Einstein E-640 for HyperSync with HyperSync is most effective at full power with these flashes because of their IGBT design. HSS/Auto-FP is suggested for users shooting above X-sync with Speedlites. You can read more about IGBT designed flashes here: <http://www.paulcuff.com/sfe-flashduration.php>

Read the [HyperSync Setup](#) page for more detailed information on how to adjust HyperSync.

Factors to consider

There are many factors that may impact HyperSync performance.

Flash Duration

- Flash duration is a critical factor in HyperSync performance. The flash duration is the length of time from when your flashtube is first energized to when it is no longer emitting energy. Longer flash durations are better. You may want to compare t.5 times from flash manufacturers to see how long or short your flash is compared to others.

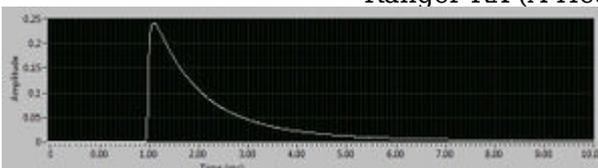
- Difference Flash Duration Makes With Otherwise Matching Equipment



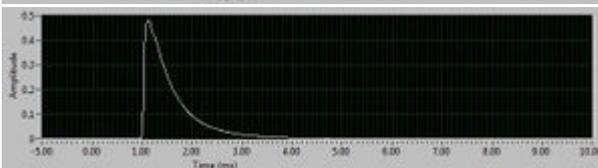
Ranger RX (S Head) at full power, 5D Mark II 1/8000th f/22



Ranger RX (A Head) at full power, 5D Mark II 1/8000th f/22



Ranger RX S Head Flash Duration Shape t.5=1/1150



Ranger RX A Head Flash Duration Shape t.5=1/2300

Power Level

- Flash duration is a critical factor in HyperSync performance. The flash duration is the length of time from when your flashtube is first energized to when it is no longer emitting energy. Longer flash durations are better. You may want to compare t.5 times from flash manufacturers to see how long or short your flash is compared to others.

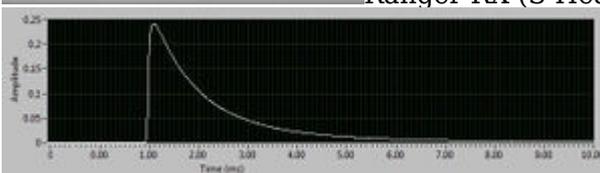
- Difference Power Level has on Flash Duration



Ranger RX (S Head) at full power, 5D Mark II 1/8000th f/22

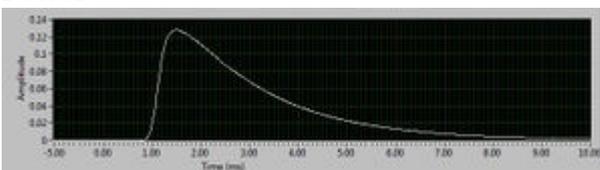


Ranger RX (S Head) at lowest power, 5D Mark II 1/8000th f/22



Ranger RX S Head Flash Duration Shape - Highest

Power



Ranger RX S Head Flash Duration Shape - Lowest

Power

Use with IGBT-controlled strobes

- A Speedlight, Einstein E640, or other IGBT-controlled flash will need to be used at full power with HyperSync. Power levels less than full will result in clipping at the top and bottom due to the way IGBT-controlled flashes adjust flash duration for power control.

To read more about how IGBT-controlled flashes differ from other types of flashes, see the [IGBT-controlled flashes vs. Voltage-controlled flashes](#) page.

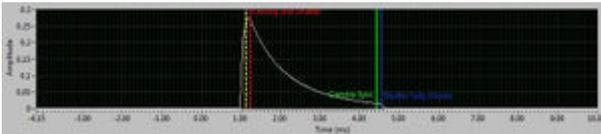
- IGBT-controlled flash at 1/1 power and 1/2 power



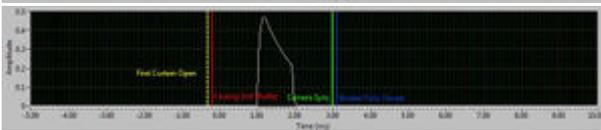
Einstein E640 at full power, 5D Mark II 1/8000th f/11



Einstein E640 (with PowerMC2) -1 stop from full, 5D Mark II 1/8000th f/11



Einstein E640 Flash Duration Shape t.5=1/2000th



Einstein E640 Flash Duration Shape t.5=1/4000th (estimated)

Camera Choice

- Cameras with larger and slower shutters can produce more noticeable gradation. Cameras with faster moving shutters and smaller sensors can improve HyperSync success by minimizing gradation. Faster or slower moving shutters are not the same as your camera's shutter speed setting.

- Camera Choice



Ranger RX (S Head) at full power, 5D Mark II 1/8000th f/22 (**Slower Shutter**)



Ranger RX (S Head) at full power, 1D Mark IV 1/8000th f/22 (**Faster Shutter**)

- Some cameras allow enough time for HyperSync to fire before the camera moves its first shutter. Some do not. Different combinations yield different results.
- Communication Time Limitation



•

Ranger RX (S Head) at full power, Canon 5D Mark II 1/8000th f/22

(More Communication Time)



•

_____ Ranger RX (S Head) at full power, Nikon D3 1/8000th f/22 (HyperSync Only Enabled) **(Less Communication Time)**



Contents

- [1 Features](#)
- [2 AC3 Quick Start How-To](#)
- [3 Operation](#)
 - [3.1 Mode Switches](#)
 - [3.2 Release Button](#)
 - [3.3 Status LED](#)
 - [3.4 Power Dials](#)
- [4 Specifications](#)
- [5 Power Control for Non-Compatible Cameras](#)

The AC3 ZoneController for Canon and Nikon is the gem of the ControlTL® product line. Add it to your on-camera MiniTT1® Transmitter or FlexTT5® Transceiver and you instantly have three zones of flash control. Whether working in TTL or Manual mode, you now have control over all your flashes directly from the camera's position. Put your flashes wherever you want, without worrying about having to access them during a shoot. With the AC3 ZoneController, you are in total control of your flash.

*There are **two separate versions of the AC3** - one with a Nikon hotshoe, and one with a Canon shoe. Make sure to purchase the proper version for use with your system!*

Features

- Three independent zones of flash control
 - 6 stops of flash control in 1/3rd stop increments
 - Turn zones on and off remotely
 - Two dedicated AC3 versions - one for Nikon, and one for Canon systems.
 - Works in PowerTracking, E-TTL II, CLS/i-TTL or Manual mode
 - Works with Canon or Nikon Speedlights, AlienBees, White Lightning, Einstein™ E640, and Elinchrom RX flashes.
 - Put your flashes where you want, without worrying about accessing them during a shoot.
-

AC3 Quick Start How-To

1. Slide the AC3 onto your on-camera MiniTT1 or FlexTT5. Power on the transmitter, then the camera.
2. Set up remote Speedlights on FlexTT5 radios normally. Power on the flash, then the FlexTT5.
 - Set all Speedlights on remote FlexTT5 radios to normal TTL Mode. Do not use Manual or MASTER / REMOTE on your remote Speedlights. The AC3 will use either Nikon or Canon TTL commands to control manual power levels when the AC3 Mode Switch is set to M (Manual).
 - Use the FlexTT5 Zone Switch to assign Zone A, B, or C to the Speedlight.
3. On the AC3, set the Mode Switches to M (Manual) or A (Auto) for the zones in use.
 - Adjust flash output power with the Power Dials:
 - + = Black numbers on a white background increase flash output by the stops shown.
 - - = White numbers on a black background decrease flash output by the stops shown.
 - Note: Make sure the camera is awake (half-press the shutter button) when changing settings to assure AC3 settings are transmitted to remote ControlTL radios.
4. Take pictures normally. *(Note: if you are using Canon radios, your first shot will be a calibration shot and will not trigger your remote flashes)*

Operation



Make sure the camera is awake (half-press the shutter button) when changing settings to assure AC3 settings are transmitted to remote ControlTL radios.

Mode Switches

The mode switches control the modes of operation for ControlTL receiving radios. It also controls zone on/off for PocketWizard Standard Channel Receivers with Quad-Triggering Zones, like the MultiMAX, Plus III, or flash packs with built-in PocketWizard radios, when using Standard Channels 17 or higher.

- **0 = OFF** - Flashes will not trigger. Set unused zones to 0.
- **M = Manual Mode** - ControlTL compatible flashes will use the manual power output value set on the AC3 Power Dial. See the [power dial](#) chart below for more info.

- **A = Auto Mode** - ControlTL compatible flashes will use the Flash Exposure Compensation (FEC) as set on the AC3 Power Dial. Nikon Speedlights will perform i-TTL exposures. When compatible studio flashes are used, PowerTracking will engage (see the [PowerTracking](#) Wiki page or in the AC9 AlienBees Adapter, PowerST4 or PowerMC2 Quick Guides for more information).

Manual and Auto modes can be used at same time. Manual zones will not be calculated as part of the E-TTL exposure. Zones set to 0/ (OFF) will not trigger.

FEC NOTE: In Auto Mode, Flash Exposure Compensation (FEC) can be set in more than one place and the values are used together - all positive and negative FEC values will be combined.

- FEC can be set:
 - On each zone independently using the AC3 Power Dial when the zone is set to A (Auto)
 - On each remote Speedlite using the camera's FEC control. All AC3 zones set to A (Auto) will be affected equally.

If the combined FEC adjustments are more or less than your flash's capabilities, then the flash will operate at maximum or minimum output accordingly

Release Button

Press the release button to remove the AC3 from your transmitter.

Status LED

The green Status LED blinks occasionally to indicate normal operation.

Power Dials

Sets the flash output power.

AC3 Power Control Chart (Manual)			
AC3 Power Dial Setting	Speedlights	Most ControlTL Studio Strobes (5-stop Range)	White Lightning X800, X1600 & X3200 Only; Low Range Mode
+3	1/1	1/1	1/4
+2.7	1/2 + 0.7	1/2 + 0.7	1/8 + 0.7
+2.3	1/2 + 0.3	1/2 + 0.3	1/8 + 0.3
+2	1/2	1/2	1/8
+1.7	1/4 + 0.7	1/4 + 0.7	1/16th + 0.7
+1.3	1/4 + 0.3	1/4 + 0.3	1/16 + 0.3
+1	1/4	1/4	1/16
+0.7	1/8 + 0.7	1/8 + 0.7	1/32 + 0.7
+0.3	1/8 + 0.3	1/8 + 0.3	1/32 + 0.3
0	1/8	1/8	1/32
-0.3	1/16 + 0.7	1/16 + 0.7	1/64 + 0.7
-0.7	1/16 + 0.3	1/16 + 0.3	1/64 + 0.3
-1	1/16	1/16	1/64

-1.3	1/32 + 0.7	1/32 + 0.7	1/128 + 0.7
-1.7	1/32 + 0.3	1/32 + 0.3	1/128 + 0.3
-2	1/32	1/32	1/128
-2.3	1/64 + 0.7	1/32	1/128
-2.7	1/64 + 0.3	1/32	1/128
-3	1/64	1/32	1/128

Specifications

Compatibility	Canon E-TTL II OR Nikon CLS/i-TTL Elinchrom RX, AlienBees, White Lightning, Einstein™ E640 Flash
Mounting	Hot Shoe
Selector Switch	Off, Manual, Auto (PowerTracking, E-TTL II, CLS/i-TTL)
Adjustment Range	Auto = +/- 3 stops, 1/3 stop increments
Status Indicator	LED: Green status indicator
Operating Temperature	Above -15° C (5° F) and below 50° C (120° F)
Storage Temperature	Above -30° C (22° F) and below 85° C (185° F)
Construction	high impact plastic - <i>RoHS Compliant</i>
Power	Receives power from attached radio
Dimensions	2" (5cm) wide x 1.7" (4.2 cm) long x .9" (2.1cm) tall
Weight	.82 ounces (23.25 grams)
Requirements	Dedicated AC3 Version for Nikon and Canon systems. Must be used in conjunction with a MiniTT1 or FlexTT5 on camera.

Power Control for Non-Compatible Cameras

You can use your MiniTT1 or FlexTT5 with an AC3 ZoneController on nearly **any** camera with a basic hot shoe to get Manual Power Control for Mamiya, Leica, Hassleblad, mirrorless cameras, etc. Trigger any ControlTL receiver in sync up to 1/125 on some models of camera.

You can read more about this exciting feature on our [Power Control for Non-Compatible Cameras](#) page.

Next recommended reading: [Factory Reset](#)

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

Advanced features in the MiniTT1 and FlexTT5 are available when using the PocketWizard Utility and connecting your radio to your PC or Mac via a USB cable. The PocketWizard Utility allows you to [update](#) your USB enabled PocketWizard with the latest Firmware and adjust the features of the MiniTT1 and FlexTT5.

The latest version of the can, and easy steps to install, can be found on our [Getting Started](#) page.

Contents

- [1 System Requirements](#)
- [2 Mac OS X El Capitan Note](#)
- [3 Key features of the PocketWizard Utility](#)
- [4 Preparing to Use the PocketWizard Utility for the first time](#)
- [5 Setting the MultiMAX to USB mode](#)
- [6 Setting the MiniTT1/FlexTT5 to USB mode](#)
- [7 PocketWizard Utility FAQ](#)

System Requirements

- Internet connection (for downloading Firmware and Application updates).
- Working USB connection (to connect USB enabled PocketWizard).
- USB cable with standard USB connector(to connect to PC) to mini USB connector (to connect to PocketWizard).

Mac OS X El Capitan Note

At this moment, our PocketWizard Utility appears to be incompatible with Mac OS X El Capitan. Something has changed in how they handle USB devices. We're looking into it. In the meantime, you'll either have to refrain from updating to El Capitan to work with the PocketWizard Utility, or

find another machine to use it on. We're not the only ones experiencing issues:

- [Lightroom and El Capitan](#)
- [Issues occur when running Steinberg products under OS X 10.11](#)
- [OS X 10.11 El Capitan Third Party Product Compatibility Information](#)

Their new System Integrity Protection shifts how things work. It impacts some simple connectivity stuff we've relied upon. We are researching solutions now:

- [System Integrity Protection - Adding another layer to Apple's security model](#)

Key features of the PocketWizard Utility

- Updating the firmware in USB enabled PocketWizards. Currently this includes the [Plus III](#), [MultiMAX](#), [PowerMC2](#), [PowerST4](#), and the Canon and Nikon versions of the [MiniTT1](#) and [FlexTT5](#).
- Modifying the settings for the C1 and C2 configurations in a MiniTT1 or FlexTT5 and select functions of the PowerST4 and PowerMC2. Configurations are similar to custom function settings in your camera, allowing you to have different setups, depending on the results desired or equipment used. Please see the [Factory Reset](#) page for the default configuration settings.

Preparing to Use the PocketWizard Utility for the first time

First, follow the steps on [Getting Started](#) page.

Once the PocketWizard Utility has been installed successfully you should register all USB enabled PocketWizard units with the application and check for firmware updates. To do this follow the steps below.

1. Start the PocketWizard Utility.
2. Connect the USB cable from your computer to your PocketWizard USB enabled radio. The PocketWizard Utility will automatically find the radio and register it in the application. This will be complete when you see the radio information on the main screen.
3. Unplug the radio and repeat the previous steps for the rest of your USB enabled PocketWizard radios.
4. Once all of your radios have been registered, click the Check For Updates button. Refer to the [Update Tab](#) section for more information.

Setting the MultiMAX to USB mode

Follow the instructions on the [MultiMAX FAQ](#).

Setting the MiniTT1/FlexTT5 to USB mode

The MiniTT1 and FlexTT5 auto-detect when the USB cable has been connected. To see the battery level, the MiniTT1 and the FlexTT5 need to be powered on for at least 3 seconds before plugging in the USB cable.

PocketWizard Utility FAQ

Having trouble with the Utility? Check out our [PocketWizard Utility FAQ](#) page!

Next recommended reading: [Basic Wireless TTL](#)

Sometimes you need to reset either the channels you are using, or reset the radio back to factory defaults. There are two levels of RESET for ControlTL radios:

RESET A, a Simple Reset, allows you to reset learned channels to the channels last set in the Utility (C.1 and C.2 configurations). This reset option will retain all features set via the Utility.

RESET B, a Factory Default Reset, will reset all features and channels to the Factory Default Settings.

IMPORTANT: Factory Reset and [Learn Mode](#) both use the TEST button for a long time. If you are not sure if you are engaging Learn Mode or Factory Reset, read about the [Status LED](#) to see the difference.

Contents

- [1 Reset A - Reset Channels Only](#)
- [2 Reset B - Factory Defaults](#)
- [3 Firmware Upgrades](#)
- [4 Factory Reset from within the Utility](#)
- [5 MultiMAX Factory Reset](#)
- [6 Default Settings](#)
 - [6.1 MiniTT1 and FlexTT5 Default Settings](#)
 - [6.2 PowerST4 Default Settings](#)
 - [6.3 PowerMC2 Default Settings](#)
 - [6.4 MultiMAX Default Settings](#)

Reset A - Reset Channels Only

RESET A: Returns both C.1 and C.2 to the channels you last set in the PocketWizard Utility. Reset A is primarily used for resetting channels that were taught in the field.

1. Turn the radio off
2. While holding TEST, slide the power switch to C.1 (C.1 and C.2 are always reset together).
3. Hold TEST for a few moments until you see 2 green blinks, then release TEST. The channels

are restored to their last Utility values. If you've never set the channels using the Utility, then the channels are restored to factory defaults.

Reset B - Factory Defaults

RESET B Returns all of your radio's settings, including channels and all settings from the

[PocketWizard Utility](#), to factory defaults. Any firmware updates you may have performed on the radios are retained.

1. Turn the radio off
2. While holding TEST, slide the power switch to C.1 (C.1 and C.2 are always reset together).
3. Hold TEST for ~10 seconds until you see 4 green blinks, then release TEST. The radio is reset to factory defaults.

Firmware Upgrades

After updating your firmware, always perform a Reset B. While the PocketWizard Utility performs a factory reset automatically when you upgrade the firmware, and has a Factory Reset button on the Update tab, Reset B remains the recommended method after a firmware upgrade.

Factory Reset from within the Utility

You now have the option to perform a “Factory Reset” from within the [PocketWizard Utility](#) for your ControlTL radio. In addition, when you update your radios via the Utility, factory reset will be performed automatically which can be a real time saver. Your previous settings will be saved, and when possible, you will be able to re-load them after the firmware update and factory reset. A large jump in firmware versions or a specific change in the firmware may make it impossible to re-load, so be sure to write down any custom settings for Configuration 1 or Configuration 2 before you reset your radios so you can re-apply them after the upgrade.

MultiMAX Factory Reset

The procedure for resetting a MultiMAX to factory defaults is different from the procedure used for a ControlTL radio.

1. Turn the radio off
2. While holding C, slide the power switch to TRANSMIT (TRANSMIT and RECEIVE are always reset together).
3. When you see the "CLEAR/RESET" message on the LCD, release C. The radio is reset to factory defaults.

Default Settings

When you perform a Factory Reset, the settings below are used.

MiniTT1 and FlexTT5 Default Settings

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

[Channel Tab](#)

C.1 = ControlTL Transmit Channel = 1

Standard Transmit Channel = 1

C.2 = ControlTL Transmit Channel = 2

Standard Transmit Channel = 2

ControlTL Transmit Priority at X-Sync = enabled - **Nikon FlexTT5 Only**

Use ControlTL for Receive Channel = enabled - FlexTT5 Only

C.1 = ControlTL Receive Channel = 1 - FlexTT5 Only

Standard Receive Channel = 1 (but disabled) - FlexTT5 Only

C.2 = ControlTL Receive Channel = 2 - FlexTT5 Only

Standard Receive Channel = 2 (but disabled) - FlexTT5 Only

[Flash Tab](#)

Rear Curtain Sync Begins At: = Off

Optimized Rear Curtain Sync / Manual Shutter Speeds = disabled
Speedlite = Normal E-TTL/i-TTL
Force TTL Master Mode = enabled - Canon MiniTT1 and FlexTT5 Only
Pre-Flash Boost Mode = Disable Pre-Flash Boost - Canon MiniTT1 and FlexTT5 Only
Remote Beeper = No Change On Wakeup
Remote Optical Trigger = No Change On Wakeup

HyperSync/HSS Tab

HyperSync Only (Disable HSS/FP) = disabled
HSS/FP Begins At (HyperSync Ends) = 1/250th
HyperSync Flash Duration for Standard Channels = 7
Manual HyperSync For Standard Channels = disabled
Manual HyperSync Offset (slider) = 0 (but disabled)

AC9 Flash = AB800 - FlexTT5 Only
Optimize HyperSync Automation For: = Reduced Clipping - FlexTT5 Only
P2 HyperSync Flash Duration = 7 - FlexTT5 Only

PowerTracking Tab

PowerTracking = Full Manual
Aperture Centered On: = F:11 (but disabled)
ISO Centered On: = ISO 100 (but disabled)
AC9 Flash Exposure Compensation = 0.0 - FlexTT5 Only

Modeling Tab

Modeling Light Control = disabled
Control Mode = Camera Wake (but disabled)
Modeling Light Autotrack = disabled
Modeling Light Active = 100% (but disabled)
Modeling Light Sleep = disabled
Modeling Light Sleep = 10% (but disabled)
Modeling Light Sleep Delay After Camera Sleeps = 30 secs (but disabled)
Modeling Light Delay After AF-Assist = 2 secs (but disabled)

Sleep Tab

Remote TTL Flash Sleep = disabled
Remote TTL Flash Delay = 600 secs (but disabled)
Local Flash Sleep = disabled - FlexTT5 Only
Local Flash Delay = 600 secs (but disabled) - FlexTT5 Only

Misc Tab

Basic Trigger Mode = disabled
Transmitter Only = disabled - FlexTT5 Only
Disable Shoe Communications = disabled - FlexTT5 Only
SpeedCycler = disabled
Top Shoe Detection Mode = AC3/AC9 - Canon MiniTT1 and FlexTT5 Only
Camera Model = Auto - Canon MiniTT1 and FlexTT5 Only

PowerST4 Default Settings

Channel Tab

Use ControlTL for Rx Channel = enabled
ControlTL Channel 1, Standard Channel 1

Exposure Tab

Exposure Compensation = 0.0

Sleep Tab

Modeling Light Sleep Mode = enabled
Modeling Light Sleep Delay = 600 secs/10 minutes

Misc Tab

Ranger RX Head Selection = S-Head
Digital 1200/2400RX Head Selection = Digital S

PowerMC2 Default Settings

Exposure Tab

Flash Exposure Compensation = 0

Sleep Tab

Modeling Light Sleep Mode = enabled
Modeling Light Sleep Delay = 600 secs
Hibernate Mode = enabled
Hibernate Delay = 60 min

MultiMAX Default Settings

Coming Soon

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

Contents

- [1 Check for Updates Button](#)
- [2 Update Firmware Button](#)
- [3 Factory Reset](#)



Check for Updates Button

The Check For Updates button will communicate via your internet connection to look for any updates to the [PocketWizard Utility](#) and all PocketWizard radios that have been registered to your computer. Make sure to allow FTP communications through your network firewalls, if necessary.

- Click the Check For Updates button under the Updates tab.
- If there is an update to the PocketWizard Utility, a new window will give you a link to download the

new firmware.

- If there are any updates for your PocketWizard units that have been previously registered a new dialog box will show the compatible firmware revisions. By default the latest firmware for the connection radio will be selected. Click Download Now to proceed.
- The main screen will show the download progress in the lower right hand corner.
- At the completion of the download, a dialog box will show which radios have updates waiting locally and if any unit is currently connected to your computer.
- Follow the onscreen instructions to install the new firmware in the connected radio.

Update Firmware Button

The Update Firmware button will update or reinstall the firmware in the radio that is currently connected to the USB port of your computer.

- Connect the radio to the computers USB port.
- Wait for the main screen to update with the units information. NOTE: If the Update Firmware button is grayed out, no firmware has yet been downloaded for the connected radio.
- Click the Update Firmware button.
- A dialog box will appear confirming the update firmware process has been selected. Click OK to proceed.
- The next dialog box will indicate what firmware release is going to be installed in the unit. Clicking YES will start the install. Clicking NO will cancel the process.
- Click YES. NOTE: DO NOT DISCONNECT OR TURN OFF THE UNIT FROM YOUR COMPUTER WHILE THE UNIT IS UPDATING!
- The progress bars will show the status of the installation.
- Upon completion of the installation, a MultiMAX will beep and reset to normal mode and a dialog box will indicate the update is complete. Click OK
- For the MiniTT1/FlexTT5 the Maintenance and Settings Tab will show after clicking the update complete dialog box.
- Connect the next unit to update and repeat the steps above.

NOTE: If the MultiMAX has been disconnected or turned off during the update process the unit will only turn on in USB mode. If this happens repeat the above steps to reinstall the firmware.

Factory Reset

You can perform a "Factory Reset" from within the [PocketWizard Utility](#) for your ControlTL radio. In addition, when you update your radios via the Utility, a factory reset will be performed automatically. Your previous settings will be saved, and when possible, you will be able to re-load them after the firmware update and factory reset. A large jump in firmware versions or a specific change in the firmware may make it impossible to re-load, so be sure to write down any custom settings for Configuration 1 or Configuration 2 before you reset your radios so you can re-apply them after the upgrade.

- Click "Factory Reset"
- A dialog box that says "Are you sure you want to reset the unit to factory defaults?" will appear. Click "Yes."
- The PocketWizard Utility may flicker, and then will default to the [Channel Tab](#).
- Your radio have now been successfully reset. To see the Factory Default Settings, see the [Default Settings](#) section of the [Factory Reset](#) page.

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

[Channels](#) enable you to work with other photographers and to keep your triggering exclusive. Some channels operate on different frequencies to help you avoid interference. All PocketWizard radio slaves set to the same channel work together.

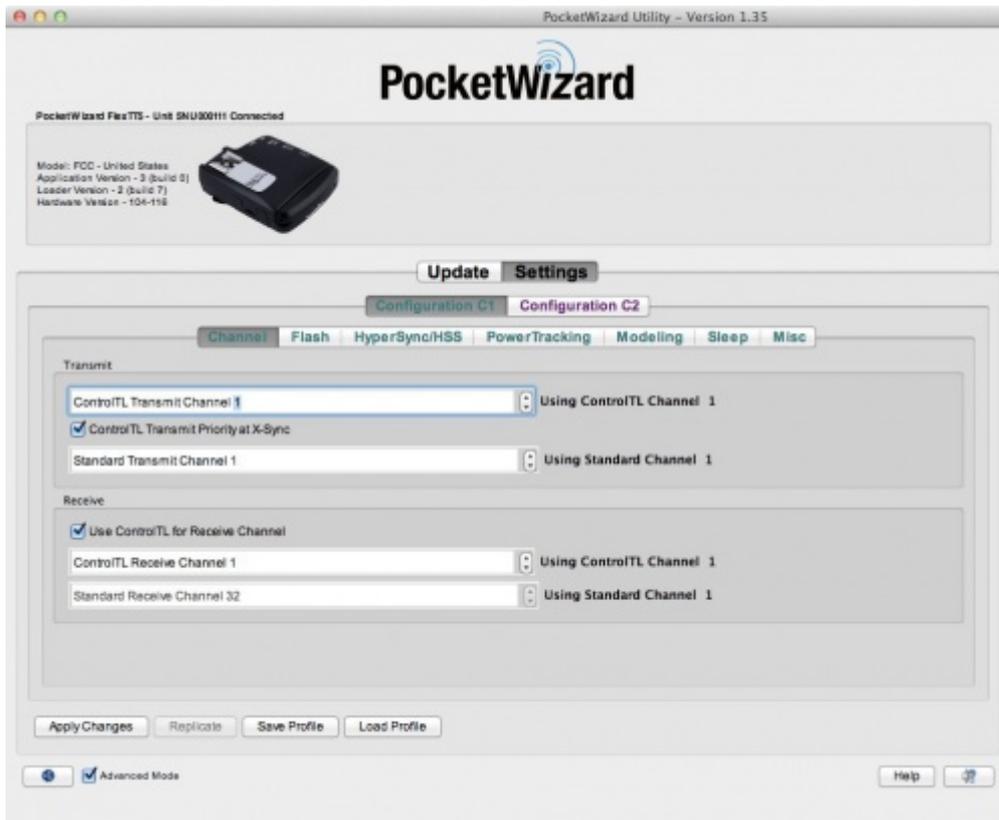
ControlTL™ uses a new channel system in addition to the Standard Channel system used in other PocketWizard radios. The MiniTT1™ Transmitter and FlexTT5™ Transceiver can trigger all existing PocketWizard radios. They can also be taught channels (including new ControlTL channels) by existing PocketWizard transmitters using [Learn Mode](#). The FlexTT5 can operate as a receiver for any PocketWizard transmitter.

When a MiniTT1 or FlexTT5 is used as a transmitter, it always sends out two triggers. One is a ControlTL trigger on a ControlTL channel, and the other is sent on a Standard Channel. This enables you to use TTL or power-controlled flashes alongside other manual flashes. A transmitting ControlTL radio synchronizes both triggers precisely.

We highly recommend using the Channel Tab to set transmitting and receiving channels - [Learn Mode](#) is **not** required for normal operation.

Contents

- [1 Channel Input Boxes](#)
- [2 ControlTL Transmit Priority at X-Sync \(Nikon Only\):](#)
- [3 Use ControlTL for Rx Channel Check Box \(FlexTT5 Only\)](#)



Note: When the MiniTT1 is plugged in it only shows the Transmit drop downs - ControlTL Tx and Standard Tx - because it is a Transmitter. The FlexTT5, a Transceiver, will show both Transmit and Receive options, because it perform both operations.

Channel Input Boxes

Use these to set the respective Transmitting and Receiving Channels.

ControlTL Transmit Priority at X-Sync (Nikon Only):

Nikon Only

Uncheck this box to have the MiniTT1 or FlexTT5 send the Standard PocketWizard Channel trigger first at your camera's x-sync speed, rather than ControlTL Channel. If you're using a PocketWizard that receives on Standard Channels as remote, like a PlusX, Plus III, Plus II, MultiMAX, or embedded PocketWizard receiver, unchecking this box may slightly increase the maximum sync speed.

This setting is checked by default, and only affects operation at your camera's x-sync speed. Unchecking this box may result in banding with a ControlTL Channel receiver at your camera's x-sync speed.

Use ControlTL for Rx Channel Check Box (FlexTT5 Only)

This control is generally only used for performing a TTL relay from a remote camera, while triggering the camera via a Standard Channel. For most applications where a FlexTT5 needs to

receive on a Standard Channel, we highly recommend using [Basic Trigger Mode](#) instead.

Check this box to have the FlexTT5 radio listen on a ControlTL channel (set below with ControlTL Rx Channel).

Uncheck this box to listen on a Standard channel (set below with Standard Rx Channel). ControlTL commands will not be received.

Receiving radios can only listen on one channel at a time; either ControlTL or Standard. If your transmitter is a MiniTT1 radio and you are triggering a remote radio that is expected to respond to E-TTL II commands, then you must use a ControlTL channel.

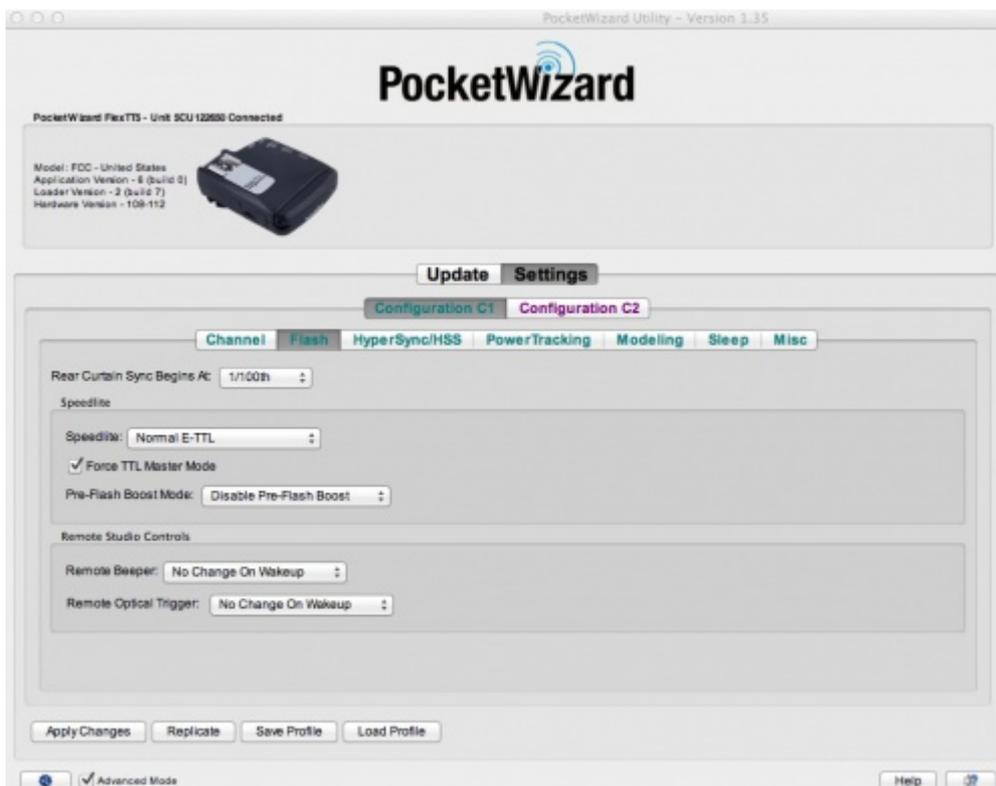
If your transmitter is a [PlusX](#), [Plus II](#), [Plus III](#), or [MultiMAX](#) radio, then use a Standard channel.

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

Contents

- [1 Rear Curtain Sync Begins At \(Canon Only\):](#)
- [2 Optimized Rear Curtain Sync / Manual Shutter Speeds:](#)
- [3 Speedlite:](#)
- [4 Force TTL Master Mode \(Canon Only\):](#)
- [5 Pre-Flash Boost Mode \(Canon Only\):](#)
- [6 Remote Beeper:](#)
- [7 Remote Optical Trigger:](#)

The flash tab contains controls that influence the behavior of both TTL and manual flashes connected to compatible PocketWizard radios.



Rear Curtain Sync Begins At (Canon Only):

Canon Only

Use this setting to control the shutter speed that Rear Curtain Sync begins at with your Canon camera. The default setting is 1/100th.

(Nikon's Rear Curtain Sync is controlled on the Camera Body instead, and begins at 1/125th.)

Read more about [Rear Curtain Sync here](#).

Optimized Rear Curtain Sync / Manual Shutter Speeds:

This setting will allow for a more precise sync between the camera and the flash, greatly reducing afterglow. This setting is only for shooting with your camera set to manual shutter speeds. If you are using Aperture Priority Mode which automatically selects the shutter speed for you, make sure to uncheck this control.

Speedlite:

Adjusts how Speedlites will respond to the AC3 or ControlTL Transmitter with no AC3. Set to "Normal E-TTL" or "Normal i-TTL" to have remote E-TTL/i-TTL flashes respond to ControlTL or TTL changes normally. Set to "No Change (Trigger Only)" and this transmitting radio will not change the light level put out by remote Speedlights - the remote Speedlite will trigger at the last level set. Use "No Change (Trigger Only)" if you are working with another camera that is controlling the flash output levels.

Note that selecting "No Change (Trigger Only)" on this menu disables power controls ONLY for Speedlights - studio power controlled flashes using a [PowerST4/PowerMC2/AC9](#) will still respond normally. To disable studio power controls as well, select "No Change (Trigger Only)" under the [PowerTracking Tab](#).

Force TTL Master Mode (Canon Only):

Canon Only

This mode enables the use of a Speedlite that lacks Master Mode in the shoe of a ControlTL transmitter to trigger remote flashes. The transmitter tells the camera that Master Mode is active even though that mode is not available or set in the flash. All TTL remotes will operate as one zone of light when used this way.

This also benefits the 580EX (I and II) as it will emit fewer communication flashes. This reduces the "flickering pre-flash" that bothers some subjects. All flash controls remain active including the ability to adjust remote flash power from a 580EX. If you wish to retain the ability to toggle on and off your remote flashes using the control on your 580EX or 580EX II when not in ratio mode, you will need to uncheck "Force TTL Master Mode."

[Pre-Flash Boost Mode \(Canon Only\):](#)

Canon Only

In certain TTL situations, especially when shooting in full sun or over long distances, the normal pre-flash is simply not enough for the camera to see. When Pre-Flash Boost is engaged, you get a pre-

flash that is two stops brighter. This will approximately double the distance that the camera can make sense of the TTL pre-flash information, or help compensate for the reduced output caused by a light modifier or bounced flash.

This setting has three options:

Disable Pre-Flash Boost: (Default Setting) This turns Pre-flash Boost off completely and uses native power levels for preflashes.

Auto Pre-Flash Boost: Selecting this option enables Pre-Flash Boost whenever the flash head is rotated in any direction other than the standard 90° position. In the standard 90° flash head position, Pre-Flash Boost will not be used.

Enable Pre-Flash Boost: Selecting this option enables Pre-Flash Boost full-time (helpful when using diffusers).

Remote Beeper:

Determines what settings the remote flash's ready beeper will use the next time you half-press the camera's shutter release. Note that this control affects studio strobes only, and will not have any effect on Canon or Nikon speedlights.

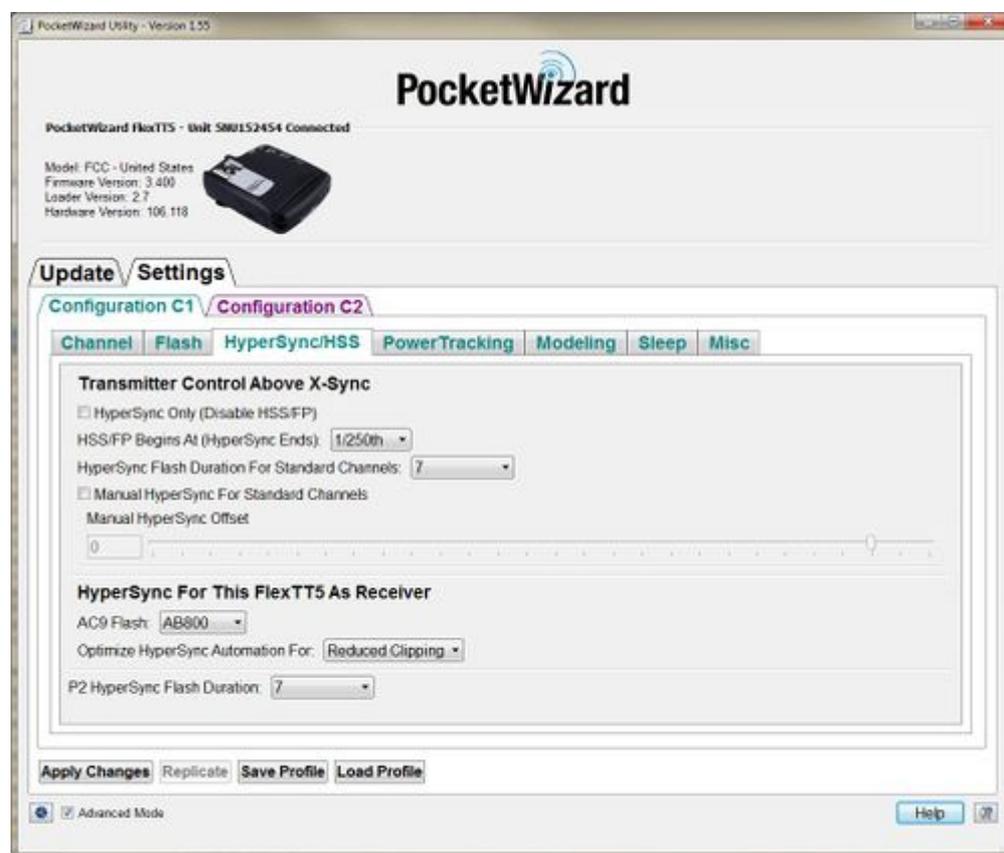
Remote Optical Trigger:

Determines what settings the remote flash's optical trigger will use the next time you half-press the camera's shutter release. Note that this control affects studio strobes only, and will not have any effect on Canon or Nikon speedlights.

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

Contents

- [1 HyperSync Only \(Disable HSS/FP\)](#)
- [2 HSS/FP Begins At \(HyperSync Ends\)](#)
- [3 HyperSync Flash Duration For Standard Channels 1 \(FAST\) to 10 \(SLOW\)](#)
- [4 Manual HyperSync for Standard Channels](#)
- [5 Manual HyperSync Offset \(slider\)](#)
- [6 AC9 Flash](#)
- [7 Optimize HyperSync Automation For:](#)
- [8 P2 HyperSync Flash Duration](#)



Note: Triggers on Standard Channels are only transmitted at shutter speeds faster than the camera's x-sync speed if High Speed Sync is disabled for that particular shutter speed. Our radios

use HyperSync at the shutter speed immediately higher than the camera's sync speed by default.

For example, on a camera with a 1/250th x-sync speed, HyperSync will be used at 1/320th, and then High Speed Sync will be used at 1/400th and above in the default configurations.

HyperSync Only (Disable HSS/FP)

Check this box to completely disable [High Speed Sync](#) and instead use [HyperSync](#) exclusively.

HyperSync Users:

- This control must be enabled before using Standard Channel receivers for [HyperSync](#). If this control is left disabled (default), remotes with Standard Channel receivers will not fire.
- Enabling/disabling this control will have an impact on HyperSync results for Nikon users with [ControlTL](#) or Standard Channel receivers. For the most consistent HyperSync results with Nikon cameras, enable HyperSync Only. When HyperSync Only is left disabled, flash coverage may be more even, though HyperSync timings may not be optimized and a lower-power portion of the flash curve will be captured.
- Canon users who are performing HyperSync with ControlTL receivers need not enable HyperSync Only - their results will not change as a result of toggling this control.

HSS/FP Begins At (HyperSync Ends)

Select the shutter speed where HyperSync Timings are no longer used and High Speed Sync/FP Flash is engaged.

For example, selecting 1/1250th for this dropdown will use HyperSync at shutter speeds up to and including 1/1000th, and begin using High Speed Sync.

HyperSync Flash Duration For Standard Channels 1 (FAST) to 10 (SLOW)

These settings automatically take into account the specific shutter timings of your camera, and combines them with an estimated duration of your remote flash.

A setting of 1-3 (FAST) will work best with a flash that has a short duration, like most hot shoe flashes. A 4-7 (MEDIUM) setting would be useful for a medium duration flash, such as an AlienBees B400 or an Elinchrom 300RX, and an 8-10 (SLOW) setting would fit best for a Profoto Acute series, or higher powered Elinchrom or AlienBees flash. Some experimentation may be necessary to find the best setting for your camera and flash combination.

Manual HyperSync for Standard Channels

Checking this box enables the use of the Manual HyperSync Offset Control. HyperSync Automation is still used in the transmitter to detect your specific camera model's shutter timings. This control adjusts how remote flashes connected to Standard Channel receivers like the [Plus II](#) or [MultiMAX](#)

will trigger relative to your camera model's timings.

If you have previously found your HyperSync offset and would like to continue using that method, select this menu option and set the offset with the slider control below. A manual hyperSync value used in the previous production firmwrae is not likely to work, however, and you will need to test again to find your new HyperSync value. This is because of the new HyperSync Automation camera detection, which was not used in previous firmware.

Manual HyperSync Offset (slider)

This slider is an alternative method for adjusting HyperSync, instead of the HyperSync Flash Duration For Standard Channels control. It lets you manually specify when to trigger a flash (in microsecond) relative to the camera's normal x-sync time. This control is disabled unless Manual HyperSync for Standard Channels has been enabled.

AC9 Flash

Use this setting to choose the flash connected to a receiving FlexTT5 via an [AC9 AlienBees Adapter](#). Selecting your flash here will optimize HyperSync for that specific model.

Optimize HyperSync Automation For:

This feature offers two different methods to control the timing of HyperSync (above X-sync). Optimize HyperSync Automation For: controls the amount of “clipping” (hard black band, usually at the bottom of the frame) or “gradient” (gradual falloff of light, usually from the top of the frame to bottom). Using the settings “Reduced Clipping” or “Highest Energy” you can optimize HyperSync timings to produce a specific photographic result (outlined below). Connected flashes can include AlienBees, WhiteLightning or Zeus flashes attached via the AC9 AlienBees Adapter, flashes connected to the P2 port of a FlexTT5, or a Speedlite in the hotshoe (though Speedlites are often not the best choice for HyperSync flashes due to their short flash durations).

Reduced Clipping



Reduced Clipping keeps black bars out of the frame, but has a gradient. Shutter

speed: 1/8000

Reduced Clipping uses precision timing to keep hard black bars out of your images. This method may result in a gradation across the image (lighter at the bottom and darker at the top), but for many situations, the results are quite acceptable and useable. Reduced Clipping benefits photographers:

- Shooting outdoors where the sky is a major factor in the top part of the image
- Using aperture priority in conditions that cause the shutter speed to go above X-sync
- In any situation where the full frame must be used and cropping is not an option

"Reduced Clipping" is selected on the ControlTL receiver, as shown in the section [Configuring HyperSync](#).

Highest Energy



Highest Energy puts more light on the scene with less gradient, but there may be black bars. Shutter speed: 1/8000

Highest Energy uses precision timing to get as much flash energy into the image as possible above X-sync. This will reduce gradation, but can result in black bars or clipping in the frame. For many photographic situations this can yield acceptable or useful results as clipping can be cropped out of the image. Highest Energy benefits photographers:

- Needing as much action stopping flash power in the image as possible (remember that for HyperSync, **longer** flash durations are better)
- Gathering images where gradation is not acceptable
- In any situation where cropping is an option

"Highest Energy" is selected on the ControlTL receiver, as shown in the section [Configuring](#)

[HyperSync](#).

P2 HyperSync Flash Duration

This setting controls the automatic timings used by a receiving FlexTT5's P2/Flash port. A setting of 1-3 (FAST) will work best with a flash that has a short duration, like most hot shoe flashes. A 4-7 (MEDIUM) setting would be useful for a medium duration flash, such as an AlienBees B400 or an Elinchrom 300RX, and an 8-10 (SLOW) setting would fit best for a Profoto Acute series, or higher powered Elinchrom or AlienBees flash. Some experimentation may be necessary to find the best setting for your camera and flash combination.

Note that the flash duration of most flashes change as power levels are raised or lowered. While fully automated HyperSync remotes such as the [PowerMC2](#), [PowerST4](#) or AC9 can account for this, the P2 port cannot. This means that the setting in use above will most likely be optimal only for a particular power setting on the remote flash, and may need to be changed for a different power level. We recommend testing at the flash's full power to begin experimenting with your equipment.

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

Contents

- [1 Full Manual](#)
- [2 Center on ISO & Aperture with First Shot](#)
- [3 Center on ISO & Aperture - Set Both Below](#)
- [4 Center on Aperture Only - Set Aperture Below](#)
- [5 Center on ISO Only - Set ISO Below](#)
- [6 No Change \(Trigger Only\)](#)
- [7 Aperture Centered On:](#)
- [8 ISO Centered On:](#)
- [9 AC9 Flash Exposure Compensation: \(FlexTT5 Only\)](#)

[PowerTracking](#) allows you to adjust your remote studio flash's output power via the camera's FEC, ISO, and aperture controls. PowerTracking happens automatically when you have a MiniTT1 or FlexTT5 on a Canon or Nikon camera and you are controlling a compatible studio flash connected to a supported PocketWizard radio.



Full Manual

Turns off PowerTracking for aperture and ISO. With an AC3 ZoneController on the transmitter, any zones set to Auto Mode will operate as "Center on ISO & Aperture with First Shot (Set Below)". AC3 Manual Mode can be used to adjust flash output power manually with an AC3. The behavior of this control differs somewhat between Canon and Nikon radios:

Canon: With no AC3 ZoneController on the transmitter, the camera's ISO and FEC controls will adjust flash power output level.

Nikon: With no AC3 ZoneController on the transmitter, the camera's FEC and Exposure Compensation control will adjust flash power output level.

Center on ISO & Aperture with First Shot

The aperture and ISO as set on the camera for the first exposure after powering on the MiniTT1 or FlexTT5 will be used as the center values for PowerTracking. For example, if your camera is set to ISO 100 and F:5.6 for its first exposure, then those exposure settings will equal 3 stops down from your flash's maximum output power. Adjustments to aperture, ISO, and FEC will adjust flash output power accordingly, as will adjusting the Power Dial on an AC3 zone in Auto Mode.

Follow these steps to set the aperture and ISO values that will be used as the center point:

1. Turn on your camera and MiniTT1 or FlexTT5, but do not press your shutter button or take any pictures.
2. Set the aperture and ISO you wish to use at the center point. Shutter speed is not used for this setting.

3. Press the shutter button to take a picture. The center point is now set.
4. Adjust your camera's ISO, aperture, or FEC to control flash output from the camera automatically via PowerTracking.

Center on ISO & Aperture - Set Both Below

Lets you control the exposure settings where the center for PowerTracking will begin. Adjust the drop-down boxes for the Aperture Center-On and ISO Center-On values you want to use as teh center point (3 stops down from your flash's maximum power) for PowerTracking.

Center on Aperture Only - Set Aperture Below

PowerTracking will only work with aperture changes. Set the desired aperture using the Aperture Center-On control. ISO changes will be ignored for PowerTracking.

Center on ISO Only - Set ISO Below

PowerTracking will only work with ISO changes. Set the desired ISO using the ISO Center-On control. Aperture changes will be ignored for PowerTracking.

No Change (Trigger Only)

Turns off PowerTracking and the Power Dials will not adjust the power output of your remote flash. Use this setting if another AC3 is controlling the flash's manual power output, like when sharing flashes with another photographer and you want to use the exat same manual flash output power. Note that selecting "No Change (Trigger Only)" on this menu disables power controls ONLY for studio remotes using a [PowerST4/PowerMC2/AC9](#). To disable speedlight power controls as well, select "No Change (Trigger Only)" under the [Flash Tab](#) tab.

Aperture Centered On:

Use this control to specify the PowerTracking center point relative to aperture.

ISO Centered On:

Use this control to specify the PowerTracking center point relative to ISO.

AC9 Flash Exposure Compensation: (FlexTT5 Only)

Use this control to adjust the FEC of the flash directly connected to the AC9 in this receiving radio's hot shoe. This setting is cumulative with other FEC values set in the system. FEC can be adjusted in +/- 3 stops.

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

Contents

- [1 Modeling Light Control](#)
- [2 Control Mode:](#)
- [3 Modeling Light Autotrack](#)
- [4 Modeling Light Active XX%](#)
- [5 Modeling Light Sleep](#)
- [6 Modeling Light Sleep XX%](#)
- [7 Modeling Light Delay After Camera Sleeps](#)



Modeling Light Control

Check this box to control modeling light behavior from the transmitter.

Un-checking this box is recommended when using battery powered remote studio strobes to disable Modeling Light commands from being sent over the air. This effectively disables the modeling light -

however, the remote modeling can still be enabled manually via the remote flash's control panel.

Control Mode:

Determines when the modeling light will go to its active setting. Set to 'Camera Wake' to have the modeling light go active when the camera's shutter release is half-pressed. Set to 'AF-Assist' to have the modeling light go active only when the camera requests auto-focus assist.

Modeling Light Autotrack

Enable this control for the modeling light level to track with the camera exposure or AC3 Power Dial settings.

Modeling Light Active XX%

Sets the active output level of the modeling light if Autotrack is not used.

Modeling Light Sleep

Check this box to have the modeling light automatically go to a set output level after a set time. If this box is unchecked, the modeling light will never sleep.

Modeling Light Sleep XX%

Sets the output level of the modeling light when it sleeps.

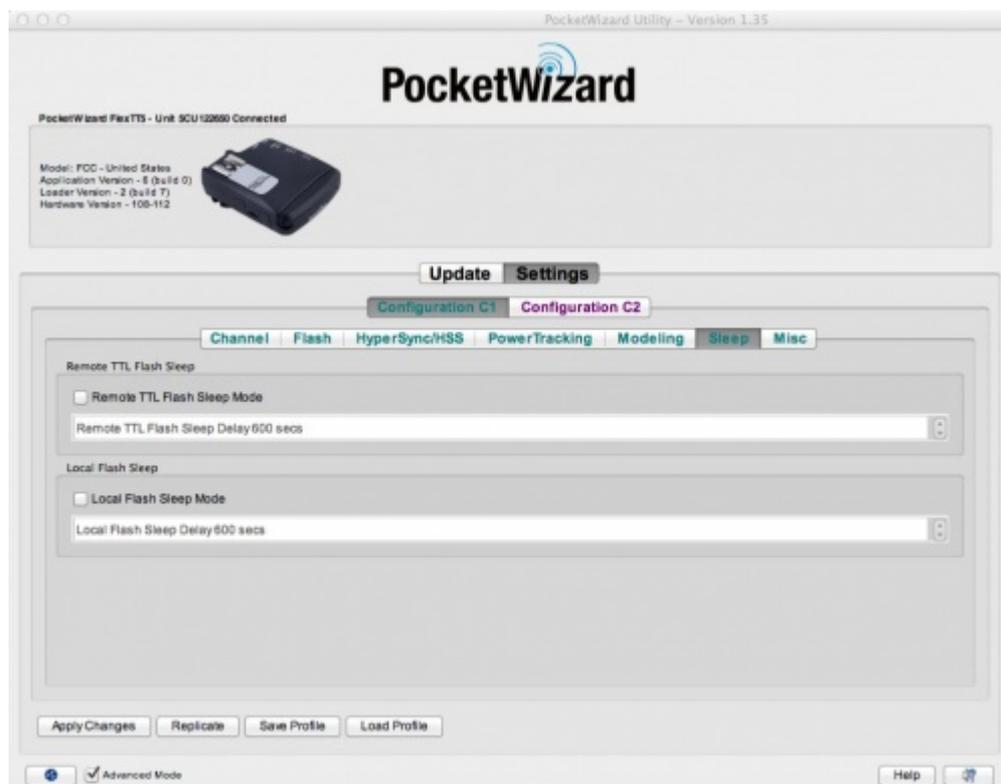
Modeling Light Delay After Camera Sleeps

Sets the number of seconds after the camera sleeps (meters go inactive) when the modeling light will go to its sleep value.

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

Contents

- [1 Remote TTL Flash Sleep Mode](#)
- [2 Remote TTL Flash Sleep Delay](#)
- [3 Local Flash Sleep Mode](#)
- [4 Modeling Light Sleep Mode](#)
- [5 Hibernate Mode](#)



Remote TTL Flash Sleep Mode

Normally your ControlTL transmitter tells all remote TTL flashes to sleep when the camera sleeps. This saves batteries in the remote flash but could cause the flash to take a moment to be ready before the next trigger. Enable this control to have your ControlTL transmitter wait to tell all remote E-TTL II flashes to sleep until a time after the camera sleeps. This control can be independently

over-ridden by a remote flash using Local Flash Sleep Mode.

Remote TTL Flash Sleep Delay

Sets the number of seconds after the camera sleeps (meters go inactive) when remote TTL flashes will go to sleep.

Local Flash Sleep Mode

(FlexTT5 Only)

If you are using a standard transmitter like a Plus or MultiMAX, the sleep command is never sent over the air, and the remote flash mounted on the FlexTT5 would always remain powered on. Enabling this control causes the FlexTT5 connected flash to remain awake for a set period after any radio activity, then enter its sleep mode for power saving. This control overrides Remote TTL Flash Sleep Mode.

Modeling Light Sleep Mode

(PowerST4 / PowerMC2 Only)

If you are using a standard transmitter like a Plus or MultiMAX, a sleep command is never sent over the air, and the remote flash mounted on the radio would always remain powered on. Enabling this control causes the connected flash to remain awake for a set period after any radio activity, then enter its sleep mode for power saving.

The Modeling Light Sleep Delay setting sets when a locally connected flash will go to sleep after the last incoming radio trigger.

Hibernate Mode

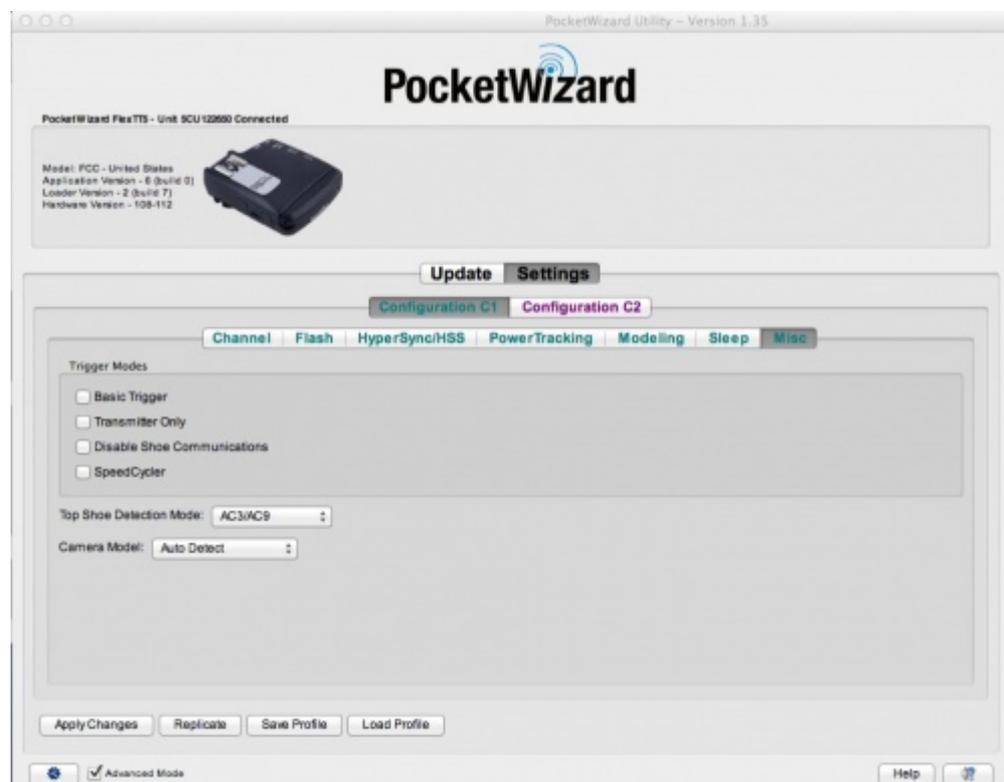
(PowerMC2 Only)

The Paul C. Buff Einstein E640 is always drawing power when connected to a power source, even when asleep or "Hibernating" - you'll notice the PowerMC2 is operating and blinking even when the Einstein is "Off". The PowerMC2 can Hibernate the Einstein E640 flash after a certain period of inactivity, controlled by the Hibernate Delay setting. This sets the period of time after an incoming trigger that the Einstein will Hibernate.

Utility Tab Quick Links
Update
Channel
Flash
HyperSync/HSS
PowerTracking
Modeling
Sleep
Misc
Exposure

Contents

- [1 Basic Trigger](#)
- [2 Transmitter Only \(FlexTT5 Only\):](#)
- [3 Disable Shoe Communications \(FlexTT5 Only\):](#)
- [4 SpeedCycler:](#)
- [5 Top Shoe Detection Mode \(Canon Only\):](#)
- [6 Canon Camera Model \(Canon Only\):](#)
- [7 Ranger RX Head Selection](#)
- [8 Digital 1200/2400RX Head Selection](#)
- [9 Flash Model](#)



Basic Trigger

Allows the MiniTT1 or FlexTT5 to operate as a basic PocketWizard radio slave on any camera it will fit, including cameras other than the Canon or Nikon models the radio is designed for. This mode only uses the center hot shoe contact for sync input and output. It does not use any of the radio's communication pins, and as such disables all TTL, HSS/FP-Sync and power-controlling operations of the radio.

Special Notes:

- This setting does not need to match across all radios in use - it needs only be used when connected to a non-compatible camera or flash. For example, transmitting MiniTT1/FlexTT5 transmitting on both ControlTL and Standard Channels can be used to trigger a remote FlexTT5 in Basic Trigger Mode (receiving on a Standard Channel).
- Due to the manufacturer-specific layout of the pins on the bottom shoe, the MiniTT1 and FlexTT5 are not guaranteed to slide onto every camera's hot shoe. Do not force the units onto your camera. Slide gently.
- In Basic Trigger Mode, you get basic remote triggering on PocketWizard Standard Channels. This works with all PocketWizard radios including the [PlusX](#), [Plus III](#), [Plus II](#), [MultiMAX](#), and devices with PocketWizard radios built-in.
- HyperSync, High Speed Sync (FP Flash), or ControlTL functionality are not available on any channel when using this mode on a transmitting radio. A remote radio set to Basic Trigger Mode can still be used for [HyperSync](#) operation, when Standard Channels are configured on the [HyperSync/HSS Tab](#) of the transmitting radio.
- This mode will reduce battery life with the MiniTT1. Normally the MiniTT1 sleeps when the camera sleeps based on data it receives from the camera on the E-TTL / i-TTL communication pins. Since those pins are deactivated in this mode, the MiniTT1 never sleeps.
- The fastest usable shutter speed for flash (X-Sync) may be affected. This mode takes ~900 microseconds (1/1111 of a second) from the time X-sync is received until the remote flash begins generating light (radio propagation delay). Some cameras and flash combinations will tolerate this delay and achieve X-sync normally. Some will not. On those cameras that will not, you may need to reduce your shutter speed to something slower than X-sync to eliminate black lines in your images. Shortening your flash duration may also help.
- A hot shoe flash or Speedlite in the top shoe of a radio in this mode will only trigger in manual mode.

Transmitter Only (FlexTT5 Only):

Allows the FlexTT5 to be used as a Transmitter only, just like the MiniTT1. This mode allows a photographer to work in the same area as other photographers, and share remote flashes, without the flash on top of the FlexTT5 being triggered by the other photographers. When this mode is engaged, the FlexTT5 will not respond to any triggers from another MiniTT1 or FlexTT5 acting as a Transmitter.

Disable Shoe Communications (FlexTT5 Only):

Check this box to turn off the bottom shoe on a FlexTT5. This is useful for remote cameras where you want to deploy the FlexTT5 radio in the shoe, but do not want the FlexTT5 to act as an Auto-

Relay transmitter.

Note: This control also disables triggering from the FlexTT5 top-shoe and P2 port. A speedlight connected to a FlexTT5 with disabled shoe communications will not fire.

SpeedCycler:

This mode is designed to rapidly cycle through multiple flash units fired individually in sequence. This allows you to fire a camera in sync with flashes faster than a single flash can recycle. It can also be used for triggering remote cameras sequentially. [SpeedCycler](#) is engaged on a transmitting MiniTT1 or FlexTT5 via this checkbox. [SpeedCycler](#) mode requires an [AC3 ZoneController](#) in the top shoe of the on-camera PocketWizard radio. Zones A, B, and C will be triggered sequentially and individual zones can be disabled by setting the AC3's Zone Switch to the off position. Both TTL and manual flash are supported. Setting flash power manually will trigger faster. Receiving [MultiMAXes](#) or [Plus IIIs](#) can be used instead of FlexTT5s provided a Standard Channel between 17 and 32 is in use. Make sure to set the Standard Transmit Channel on your transmitting ControlTL radio to match the receiving MultiMAX's or Plus III's. The MultiMAX's and Plus III's A, B, and C Zones correspond to the AC3's Zones.

Read more about this feature on our [SpeedCycler](#) page.

Top Shoe Detection Mode (Canon Only):

Canon Only

Set this control to AC3/AC9 if an [AC3 ZoneController](#) or [AC9 AlienBees Adapter](#) will be connected to the top shoe of this radio. Set it to [Nissin Flash](#) to use this radio with a Nissin Di866 or Di622 for Canon.

Read more about [Nissin Flash compatibility here](#).

Canon Camera Model (Canon Only):

Canon Only

Your radio always uses the first trigger of a session as a calibration shot. Some cameras have special considerations that can be accounted for by selecting the Camera Model via this setting. For optimal performance, we recommend selecting your specific camera model. This setting only affects radios configured to transmit when connected to a compatible camera.

Ranger RX Head Selection

([PowerST4](#)) Only

Use this setting to select the flash head in use with your Ranger RX series pack.

Digital 1200/2400RX Head Selection

([PowerST4](#)) Only

Use this setting to select the flash head in use with your Digital RX series pack.

Flash Model

([PowerST4](#)) Only

Use this setting to determine what kind of Elinchrom monobloc or flash pack you are using with your PowerST4.



1D Mark II, FlexTT5, and
CM-N3-ACC cable

As with other PocketWizard radios, the MiniTT1 and FlexTT5 can be used to trigger a remote camera. A PocketWizard remote camera cable is required to perform this operation. Different camera bodies have different remote camera connectors and require different cables. To find the right cable for your particular camera, you can use the [Cable Finder](#).

Contents

- [1 Basic Remote Camera Setup](#)
- [2 Relay Mode](#)
- [3 Remote Camera Cables](#)
- [4 Auto-Focus](#)

Basic Remote Camera Setup

1. Set the transmitting radios and the receiving radio on your camera to the same [Channel](#).
2. Attach the [remote camera cable](#) to your camera's motor drive port and the sync port on the camera's receiving radio.
3. Turn on your equipment top to bottom (radio, then camera)
4. The transmitter in your hand will trigger the remote camera when you press the TEST button

Note: For a MiniTT1/FlexTT5 remote camera setup using default radio settings, a remote camera can be triggered in single shot mode and there will be a delay between subsequent triggers until the camera's viewfinder LCD deactivates. Continuous triggering for motor drive bursts is possible if the FlexTT5 attached to the camera has either Disable Shoe Communications or [Basic Trigger Mode](#) set via the [PocketWizard Utility](#). It is not possible to combine continuous remote camera triggering with advanced features like TTL and FP/High Speed Sync. [Relay Mode](#) with TTL is only available in single shot mode. For Nikon cameras, you can adjust the length of the delay by going into the custom menu settings and changing the setting. It's called Auto Meter Off or Standby (in the newer cameras) and

the shortest delay is 4 seconds.

Relay Mode

A receiving FlexTT5 is automatically configured to use [Relay Mode](#) to trigger remote flashes in sync with the remote camera. To engage relay mode, simply set the FlexTT5s connected to remote flashes to receive ONE CHANNEL HIGHER than you're using to trigger the camera. So if the FlexTT5 triggering the camera is receiving on ControlTL Channel 1, it will transmit on ControlTL Channel 2 to trigger flash in sync. You can also specify the transmit and receive Channels via the PocketWizard Utility.

You can read more on our [Relay Mode](#) page.

Note: You can use a flash in the receiving camera's hot shoe, simply set it to Master, just as you would if you were firing directly from the camera.

See more about Relay Mode in this PW TV episode:

Remote Camera Cables

Remote camera cables fall into three general categories, each with different applications and features. Please see our [Cables](#) page for details about using each type of cable with different PocketWizards.

ACC Cables - These cables have a stereo miniphone connector on one end and a camera-specific remote connector on the other. A camera can be remotely pre-released when connected via an ACC cable to a compatible Pocketwizard radio. They can be used with the ACC port on a MultiMAX or the P1 port on a FlexTT5.

***Note:** -ACC cables shipped into the market starting July/August 2013 include an [MSMM Adapter](#) (stereo to mono miniphone) which converts a -ACC cable to a standard miniphone cable.*

Pre-release Cables - These cables have a mono miniphone connector on one end and a camera-specific remote connector on the other. They also have a pre-release switch built into the cable itself. When the switch is engaged, the connected camera behaves as if its shutter button is held down half way. This lets the camera respond more quickly and consistently, but at the expense of battery life. Pre-release cables can be used with Plus IIs, MultiMAXes, and FlexTT5s set to Basic Trigger Mode.

***Note:** As of July 2013, we've started shipping Pre-Trigger Mono Miniphone ([PTMM](#)) Adapters in place of Pre-Trigger (-P) cables. The PTMM Adapter works with any -ACC cable to convert it from a -ACC cable to a Pre-Trigger (-P) cable and has a switch for Normal or Pre-Trigger mode.*

*Pre-Trigger **ON** behavior (switch engaged and set to I):*

- Camera continuously meters and focuses (if set to autofocus)
- Reduces Lag Time/more consistent Lag Time
- Camera uses batteries faster
- Some camera controls (menus) not available

*Pre-Trigger **OFF** behavior (switch disabled and set to O):*

- Camera meters and focuses only when triggered
- Lag time affected by focus time
- Camera uses batteries normally
- Image review available
- All camera controls available

Standard Cables - These cables have a mono miniphone connector on one end and a camera-specific remote connector on the other. They can be used with Plus IIs, MultiMAXes, and FlexTT5s set to Basic Trigger Mode.

Note: -ACC cables shipped into the market starting July/August 2013 include an [MSMM Adapter](#) (stereo to mono miniphone) which converts a -ACC cable to a standard miniphone cable.

ADDED BONUS: All cables shipped into the market starting July/August 2013 will be packaged in our new retail packaging. They are now packaged in an environmental friendly 100% recycled paperboard box with white labels showing both ends of the cable as well as a compatibility list. This replaces our old packaging of a plastic zipped bag.

See more about remote camera cables in this PW TV episode:

FlexTT5 + ACC Cable Compatibility Chart	
FlexTT5 Configuration	Supported Behaviors
Receiving on a ControlTL Channel Attached to camera's hot shoe	Remote camera triggering in single shot mode Relay Mode for Standard and ControlTL Channels
Receiving on a ControlTL Channel Not in camera's hot shoe	Unsupported Remote camera cannot be triggered
Receiving on a Standard Channel Attached to camera's hot shoe	Remote camera triggering in single shot mode Relay Mode for Standard and ControlTL Channels
Receiving on a Standard Channel Not in camera's hot shoe	Unsupported Remote camera cannot be triggered
Receiving on a Standard Channel Basic Trigger Mode enabled Attached to camera's hot shoe	Remote camera triggering in single shot or continuous modes Relay Mode for Standard Channels
Receiving on a Standard Channel Basic Trigger Mode Enabled Not in camera's hot shoe	Remote camera triggering in single shot or continuous modes

Receiving on a ControlTL Channel Shoe Communications disabled Attached to camera's hot shoe	Remote camera triggering in single shot or continuous modes
Receiving on a ControlTL Channel Shoe Communications disabled Not in camera's hot shoe	Remote camera triggering in single shot or continuous modes
Receiving on a Standard Channel Shoe Communications disabled Attached to camera's hot shoe	Remote camera triggering in single shot or continuous modes
Receiving on a Standard Channel Shoe Communications disabled Not in camera's hot shoe	Remote camera triggering in single shoe or continuous modes

FlexTT5 + Standard and Pre-release Cable Compatibility Chart

FlexTT5 Configuration	Supported Behaviors
Receiving on a ControlTL Channel Attached to camera's hot shoe	Unsupported Remote camera cannot be triggered
Receiving on a ControlTL Channel Not in camera's hot shoe	Unsupported Remote camera cannot be triggered
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Receiving on a Standard Channel Not in camera's hot shoe	Unsupported Remote camera cannot be triggered
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Receiving on a Standard Channel Shoe Communications disabled Attached to camera's hot shoe	Remote camera triggering in single shot or continuous modes
Receiving on a Standard Channel Shoe Communications disabled Not in camera's hot shoe	Remote camera triggering in single shoe or continuous modes

Auto-Focus

A remote camera that is using Auto-Focus but has not been pre-released (with a pre-trigger cable or a half-press from a Plus III) will still attempt to focus a remote camera before firing an exposure. Depending on the AF setting that you have chosen for your remote camera, the auto-focus behavior will look a little different:

- When the camera is set to AF-S (Single), the camera will not release the shutter button until it can

confirm the focus. When using this setting on the camera, the camera will attempt to autofocus before releasing the shutter button.

- When the camera is set to AF-C (Continuous), the focus is continuous up until the point of the full shutter release. When using this setting on the camera, the camera will first attempt to focus and will then fire regardless of focus confirmation.

In AF-S there is the possibility of missing shots, if focus cannot be confirmed, and in AF-C there is the possibility of getting an out-of-focus shot. These limitations are tied to the camera's auto-focus system - you will see the same behavior with or without PocketWizard radios.

Next recommended reading: [Remote Camera Triggering](#)



You can trigger flashes in sync with your remote camera. This is called Relay Mode. Here's how it works:

- Press TEST on a **PocketWizard** that you are holding in your hands.
- The **FlexTT5** connected to your remote camera receives the signal and triggers your camera.
- The **FlexTT5** switches to transmit mode and waits for the camera to provide a sync pulse.
- The **FlexTT5** triggers the flash in its shoe in sync with other remote **PocketWizard** radios.

The Channel used for relay transmitting is ONE CHANNEL HIGHER than the taught or default Channel, unless you set the Channels using the PocketWizard Utility. Be careful not to teach or set your remote flashes the same Channel as your remote camera or proper synchronization will not occur.

Example: If you taught the camera-connected FlexTT5 unit Standard Channel 3 then relay transmit occurs on both ControlTL and Standard Channel 4. Remember, set the transmitter in your hand and the receiving Channel on the remote FlexTT5 connected to your remote camera to the same Channel. Set the transmitting Channel in that camera's FlexTT5 to the Channel you wish to use for your remote flashes.

[AC3 ZoneController](#)

[AC9 AlienBees Adapter](#)

[AC5 RF Soft Shield](#)

[AC7 RF Hard Shield](#)

[AC57 Power Adapter](#) for AC7

Do you have questions about PocketWizard radios in general? Check out these Frequently Asked Questions, compiled by [PocketWizard tech support](#).

Contents

- [1 Nothing is working! What should I do?](#)
- [2 I just upgraded my firmware and it doesn't work! What do I do?](#)
- [3 What cable do I need?](#)
- [4 How many radios do I need?](#)
- [5 Is my camera or flash compatible with your radios?](#)
- [6 I can't update my firmware. Why won't the Utility recognize my radios?](#)
- [7 I think my radio needs to be repaired. What do I do?](#)
- [8 Why does PocketWizard make radios in two different frequencies?](#)
- [9 Can I buy my radios directly through PocketWizard?](#)
- [10 The hot-shoe on my radio broke off! How do I get it fixed?](#)
- [11 Questions about your specific radio?](#)

Nothing is working! What should I do?

Try the following steps:

- Check your [batteries](#) - sometimes low batteries can affect radio performance.
- Make sure all of your radios have been updated to the latest firmware. Connect your radio to the [PocketWizard Utility](#) and navigate to the "Update Tab." Click the "[Check for Updates Button](#)."
- Make sure your camera and flashes are using the latest firmware, too!
- Perform a [Factory Reset](#) on all of your radios.
- Take your first shot at 1/160th or 1/200th so the system can properly calibrate timing.
- Contact [PocketWizard tech support](#) for troubleshooting help.

I just upgraded my firmware and it doesn't work! What do I do?

After updating your firmware, always perform a factory reset with the radio: See RESET B [here](#), or simply hold TEST before you power on your radio and continue to hold TEST for 10 seconds until you see 4 green blinks. While the PocketWizard Utility performs a factory reset automatically when you upgrade the firmware, and has a Factory Reset button on the Update tab, Reset B remains the recommended method after a firmware upgrade.

What cable do I need?

You can use the [Cable Finder](#) at [PocketWizard.com](#) to find the right cable for lots of different cameras and flashes.

Contact [PocketWizard tech support](#) if you still have questions.

How many radios do I need?

You will need one radio per device. That means one for each camera and one for each flash in use.

Is my camera or flash compatible with your radios?

Virtually all cameras and flashes with a standard size hot-shoe, PC socket, or sync port are compatible with Standard Channel radios like the [Plus II](#), [Plus III](#), [PlusX](#), and [MultiMAX](#).

Visit our [Canon Compatibility](#) or [Nikon Compatibility](#) pages to see if your camera or flash is compatible with our [ControlTL](#) radios like the [MiniTT1 and FlexTT5](#).

Contact [PocketWizard tech support](#) if you still have questions.

I can't update my firmware. Why won't the Utility recognize my radios?

Try the following steps:

- Start by making sure you're connecting your radios directly to your computer, rather than through a USB hub.
- Try disconnecting all additional USB devices from your computer.
- Uninstall the [PocketWizard Utility](#) and reinstall the latest version, available for download on our website, <http://www.pocketwizard.com/support/downloads/>.
- Attempt to update the radios using another user account.
- Attempt the update while running your computer in Safe Mode.
- Contact [PocketWizard tech support](#) for troubleshooting help.

I think my radio needs to be repaired. What do I do?

Contact [PocketWizard tech support](#). Warranty and repair inquiries are handled by the distributor in the region in which the radios are purchased, so please include this information in your message.

Why does PocketWizard make radios in two different frequencies?

Our radios are sold in [two different versions](#) to comply with radio laws in different countries. In the United States, the FCC reserves the 344-354 MHz frequency for PocketWizard systems. In Europe, regulations assign 433-434 MHz. A PocketWizard sold in the USA bears the letters "FCC" on the outer shell; a European version will have the letters "CE."

Can I buy my radios directly through PocketWizard?

Yes! You can buy PocketWizard products directly through the PocketWizard online store: <http://shop.pocketwizard.com/>. Or if you prefer to visit a local camera shop that carries PocketWizard products, please check out our website for information on where to buy:

<http://www.pocketwizard.com/wheretobuy/>

The hot-shoe on my radio broke off! How do I get it fixed?

Contact [PocketWizard tech support](#). Warranty and repair inquiries are handled by the distributor in the region in which the radios are purchased, so please include this information in your message. You can either send your radio in for repair or request a replacement hot-shoe to do the repair yourself.

If your radio is out of warranty, you can purchase a hot shoe directly from <http://shop.pocketwizard.com> and do the repair yourself or you can send it into us and we will do the repair for you. Please contact us at info@pocketwizard.com.

Our radios are made from a glass-reinforced resin material, and shouldn't break with normal usage. However, the hot-shoe mounts are designed to break on serious impact. We found replacing an inexpensive hot-shoe preferable to a lengthy and potentially costly camera or speedlight repair.

Questions about your specific radio?

Check out our other FAQ pages for more information on your radios:

[Plus III FAQ](#)

[PlusX FAQ](#)

[MultiMAX FAQ](#)

[MiniTT1 and FlexTT5 FAQ](#)

[PowerMC2 FAQ](#)

[PowerST4 FAQ](#)

[PocketWizard Utility FAQ](#)

Do you have a question about your [MiniTT1 or FlexTT5](#)? Check out these Frequently Asked Questions, compiled by [PocketWizard tech support](#).

Contents

- [1 Is my camera or flash compatible with ControlTL radios like the MiniTT1 and FlexTT5?](#)
- [2 I just upgraded my firmware and it doesn't work! What do I do?](#)
- [3 In what order should I turn everything on?](#)
- [4 Why doesn't my Canon camera fire the flash on the first shot following power-on?](#)
- [5 My Nikon camera won't let me choose a shutter speed faster than X-sync! How can I use HSS/FP speeds or HyperSync?](#)
- [6 Why is there such a long delay between shots when I use my FlexTT5 in a remote camera setup?](#)
- [7 How can I increase my range?](#)
- [8 Can I use the AC3 ZoneController and my ControlTL radios to control the power of my mirrorless camera?](#)
- [9 What's the fastest shutter speed I can use with HyperSync?](#)
- [10 The ISO on my remote Nikon Speedlight is stuck at 200. What's wrong?](#)
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- [12 Why won't my Plus radio trigger my FlexTT5?](#)

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Check out our [Canon Compatibility](#) and [Nikon Compatibility](#) pages for specific information on your gear.

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After updating your firmware, always perform a factory reset with the radio: See RESET B [here](#), or simply hold TEST before you power on your radio and continue to hold TEST for 10 seconds until you see 4 green blinks. While the PocketWizard Utility performs a factory reset automatically when you upgrade the firmware, and has a Factory Reset button on the Update tab, Reset B remains the recommended method after a firmware upgrade.

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Power everything on "from the top down." Local flash, then transmitting radio, then camera. Next remote flash, then receiver. Wait 2-3 seconds between each step.

Why doesn't my Canon camera fire the flash on the first shot following power-on?

With a Canon camera and [ControlTL](#) radios the first exposure after initial connection or power-on is

the calibration shot. It is recommended that you take the calibration shot at 1/160. This initiates communication between the camera and radio. This shot will not fire remote flashes.

My Nikon camera won't let me choose a shutter speed faster than X-sync! How can I use HSS/FP speeds or [HyperSync](#)?

Nikon cameras require that FP-sync be enabled to shoot faster than X-sync if they detect a TTL-capable device in their hot-shoe. Enabling FP-sync is done in the Custom Settings menu. Set "e1 Flash Sync Speed" to "1/250s (Auto FP)."

[Nikon D600](#), [Nikon D610](#), and [Nikon Df](#) users set your "e1 Flash Sync Speed" to "1/200s (Auto FP)."

Note that some cameras may have different a different menu setting to enable Auto FP, and that some cameras are not capable of HSS/FP-Sync operation. Enter your camera model into this wiki's search bar for more information, or visit [this page](#).

Why is there such a long delay between shots when I use my FlexTT5 in a remote camera setup?

When a FlexTT5 is used as a receiver on a remote camera, attached to the hot-shoe and receiving on [ControlTL channels](#), the radio cannot listen for an incoming radio trigger while also communicating with the camera's metering system. This metering system is active and communicating with the radio whenever the shutter and aperture are displayed on the top of the camera's LCD display. This shuts off after about 5-8 seconds, at which point you will be able to trigger the remote camera again. This mode of operation is useful if want a remote camera to relay a TTL signal to a remote speedlight.

To disable the communications that prevent the FlexTT5 from listening for incoming trigger signals, you can put the receiving radio into [Basic Trigger Mode](#) via the [PocketWizard Utility](#), under the "[Misc Tab](#)." Once you've enabled [Basic Trigger Mode](#) and set the radio to receive on a [Standard Channel](#), you should be able to trigger the camera as quickly as you can press the test button on the radio in your hand.

How can I increase my range?

Check out our [Long Range Performance](#) page for tips.

Contact [PocketWizard tech support](#) for help with unique long-distance setups.

Can I use the AC3 ZoneController and my ControlTL radios to control the power of my mirrorless camera?

Yes! You can use your radios to control the manual power of compatible remote speedlights with almost any camera - mirrorless, film, and other non-compatible cameras with standard sized hot-shoe mounts will work.

Read more on our [Power Control for Non-Compatible Cameras](#) page.

What's the fastest shutter speed I can use with HyperSync?

The maximum attainable shutter speed with [HyperSync](#) that produces an acceptable image depends on a variety of factors, from the age of the camera, the age of the flashes, to the type of cameras used. You can use [HyperSync](#) with any cameras on the supported list, but to find out the maximum usable shutter speed your camera can achieve, you will need to do some testing with your gear.

Check out our [HyperSync Performance with your Camera](#) article to see example images!

Visit the [HyperSync Setup](#) page for help configuring your gear.

The ISO on my remote Nikon Speedlight is stuck at 200. What's wrong?

This setting isn't required for TTL operation on the remote flash and has no effect on exposure, so the radios do not transmit camera setting information like ISO to remote flashes. The remote FlexTT5 simply gives the flash a default value on power-up, which is ISO 200.

My remote speedlights don't change their zoom when I zoom the lens on my camera. What's wrong?

Zoom tracking is a feature for on-camera flash and would cause lighting errors if performed on remotes. Nikon and Canon native systems do not have zoom tracking for remote or slave flashes, either.

Why won't my Plus radio trigger my FlexTT5?

The Plus and MultiMAX radios can transmit and receive on Standard Channels. While the FlexTT5 can transmit on both ControlTL and Standard [Channels](#) at the same time, they can only receive on one or the other. The default is to receive only on ControlTL Channels.

To enable it to receive a Standard Channel signal: plug the FlexTT5 into your computer with the Utility running. On the [Channel Tab](#), note that the Standard Receiving Channel is grayed out. Choose which Configuration setting you want to change and unclick the "Use ControlTL for Receive Channel" box. The Receiving ControlTL Channel will now gray out. You can then change the Standard Receiving Channel to match the Transmitting Channel you wish to use on your Plus or MultiMAX. Click "Apply Changes" and wait for the radio to reset.

Please remember, when using Standard Channels, all ControlTL functions are disabled, meaning that you will be unable to use TTL, remote power changes, or High Speed Sync/FP. You will need to adjust settings on the back of the flashes manually and your maximum sync speed will be X-sync.

Do you have a question about your [MiniTT1 or FlexTT5](#)? Check out these Frequently Asked Questions, compiled by [PocketWizard tech support](#).

Contents

- [1 Is my camera or flash compatible with ControlTL radios like the MiniTT1 and FlexTT5?](#)
- [2 I just upgraded my firmware and it doesn't work! What do I do?](#)
- [3 In what order should I turn everything on?](#)
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Next recommended reading: [Long Range Performance](#)

In order to achieve the best results using our radios, antenna position and placement must be considered. The photos below illustrate the optimal position for the FlexTT5 as a receiver.



{{{annotations}}}

Using the Canon included Speedlite stand.



{{{annotations}}}

Velcro®



{{{annotations}}}

Maximum range without using a cord.



{{{annotations}}}

Maximum range with an OC-E3 cord with added ferrite clamp.

Try out the latest [MiniTT1 and FlexTT5](#) firmware (other radios, too!). We appreciate your help testing our newest features and improvements before our official production release is available. Anyone can participate, but you should be very comfortable using the [PocketWizard Utility](#) and be willing to provide [detailed feedback](#) of your experiences. If that's you, please read on to begin your own beta test.

Contents

- [1 Current Firmware](#)
 - [1.1 Mac OS X El Capitan Note](#)
- [2 Canon MiniTT1 & FlexTT5](#)
 - [2.1 5DS Beta](#)
 - [2.2 Official](#)
- [3 Nikon MiniTT1 & FlexTT5](#)
- [4 PowerST4 for Elinchrom](#)
- [5 PowerMC2 for Einstein E640](#)
- [6 Plus III](#)
- [7 MultiMAX](#)
- [8 Enabling Beta Firmware](#)
- [9 Providing Feedback](#)

Current Firmware

Release notes for current official production firmware can be found on our [Getting Started](#) page.

You must be using [PocketWizard Utility](#) version 1.54 or later before installing the latest firmware.

Mac OS X El Capitan Note

At this moment, our PocketWizard Utility appears to be incompatible with Mac OS X El Capitan. Something has changed in how they handle USB devices. We're looking into it. In the meantime, you'll either have to refrain from updating to El Capitan to work with the PocketWizard Utility, or find another machine to use it on. We're not the only ones experiencing issues:

- [Lightroom and El Capitan](#)
- [Issues occur when running Steinberg products under OS X 10.11](#)
- [OS X 10.11 El Capitan Third Party Product Compatibility Information](#)

Their new System Integrity Protection shifts how things work. It impacts some simple connectivity stuff we've relied upon. We are researching solutions now:

- [System Integrity Protection - Adding another layer to Apple's security model](#)

Canon MiniTT1 & FlexTT5

5DS Beta

The current Canon ControlTL beta firmware version is **6.804** and is available through the PocketWizard Utility right now. It adds support for Canon's latest DSLR, the Canon EOS 5DS.

[Release Notes](#)

Official

The current [ControlTL Canon](#) official production firmware is **6.800**. This release is available for both FCC and CE radios. There is no beta release at this time.

Nikon MiniTT1 & FlexTT5

The current [ControlTL Nikon](#) official production firmware is **3.800**. This release is available for both FCC and CE radios. There is no beta release at this time.

PowerST4 for Elinchrom

The current PowerST4 firmware is version **5.400**. This release is available for both FCC and CE radios. There is no beta release at this time.

PowerMC2 for Einstein E640

The current [PowerMC2](#) firmware is version **2.402/3** (FCC/CE). There is no beta release at this time.

Plus III

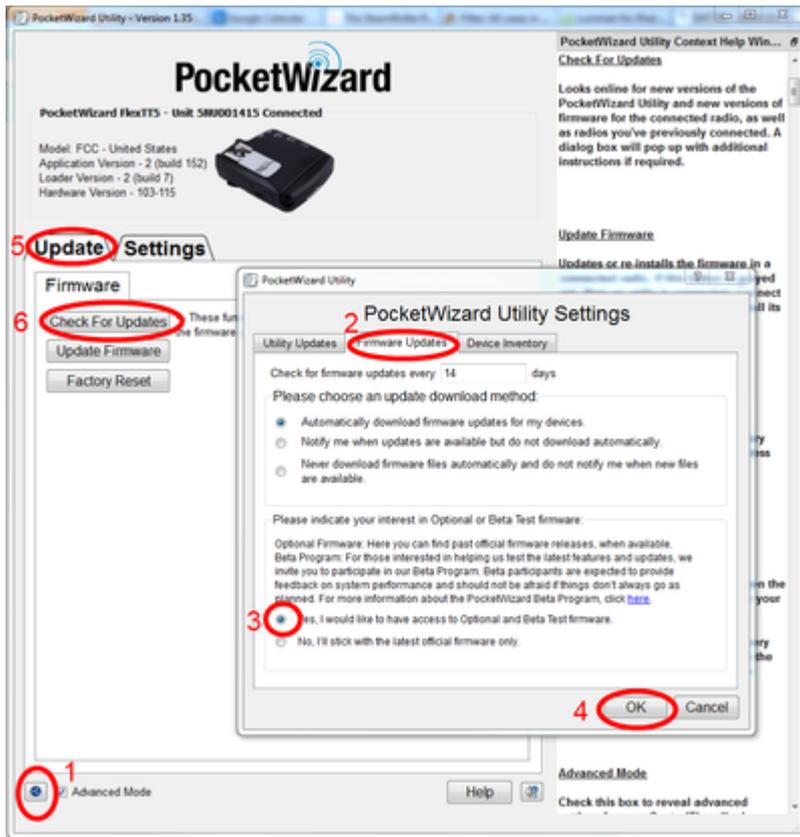
The current [Plus III](#) firmware is version **1.200**. This release is available for both FCC and CE radios. There is no beta release at this time.

MultiMAX

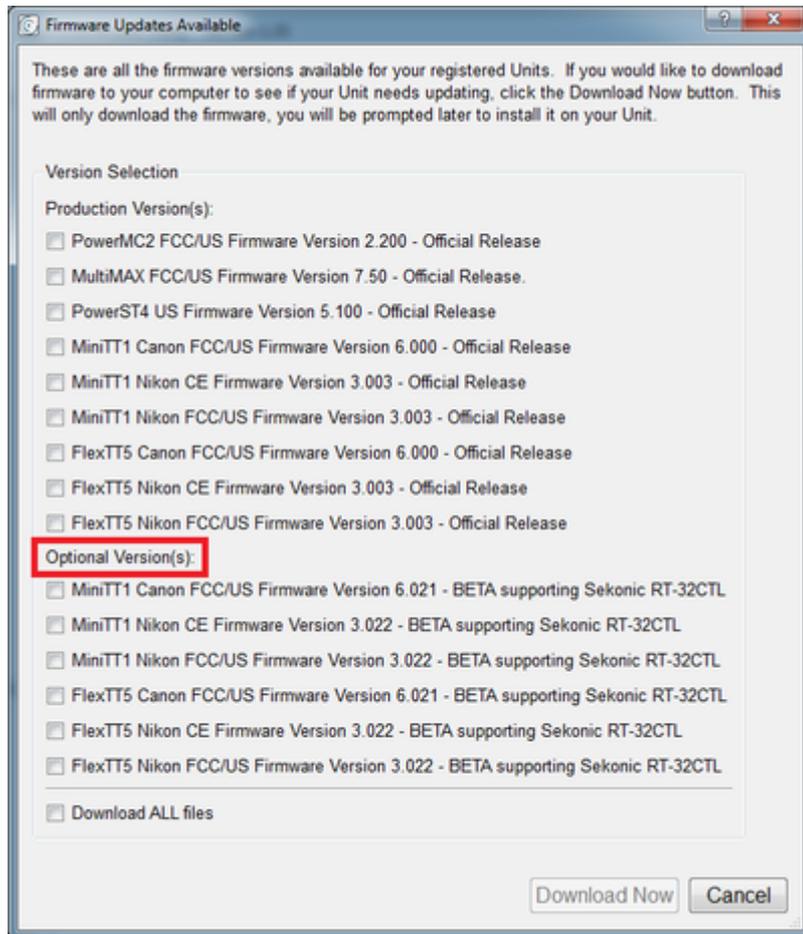
The current [MultiMAX](#) firmware is version **7.53**. This release is available for both FCC and CE radios. There is no beta release at this time.

Only MultiMAX's with a USB port are capable of downloading firmware. Some older MultiMAX units do not have a USB port.

Enabling Beta Firmware



1. To enable access to beta firmware, open the [PocketWizard Utility](#), and navigate down to the blue gear in the bottom left corner of the window.
2. Navigate over to the "Firmware Updates" tab.
3. Navigate down to the bottom and check "Yes, I would like to have access to Optional and Beta Test firmware."
4. Click OK.
5. Navigate to the [Update Tab](#).
6. Click "Check for Updates."



Navigate down to where it says "Optional Versions" and then select the option that matches your connected radio. Click OK and then follow the onscreen prompts that follow.

Providing Feedback

We need feedback on your experiences testing the beta firmware! Feedback can include your opinion of overall functionality or any bugs or issues you may have encountered. When providing feedback, the more detail you can provide the better.

Please include the following as a minimum:

- Beta firmware release version number
- Camera being used (brand, model # & firmware version)
- Flashes being used (brand & model #)
- PocketWizard radios in use

The following information would also be helpful:

- Camera settings
- Flash settings
- Location information (indoor, outdoor)
- Any potential radio interference sources
- Anything else that may help us understand your photo environment and situation.
- Computer system info
- Best way to contact you should follow-up be necessary

Please send feedback via one of these:

- [PocketWizard.com Inquires Page](#)
- betalab@pocketwizard.com - please put "beta" in the subject line.

Contents

- [1 The FCC wants you to know:](#)
- [2 Industry Canada](#)

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 the receiver.
3. Consult the dealer or an experienced radio or television technician for help.

Canon MiniTT1 FCC ID Number: KDS-PW3-004
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Canon FlexTT5 FCC ID Number: KDS-PW3-005
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Nikon MiniTT1 FCC ID Number: KDS-PW3-007
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Nikon FlexTT5 FCC ID Number: KDS-PW3-008
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Industry Canada

This device complies with Part 15 of the FCC rules and also with RSS-210 of Industry 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.

Canon MiniTT1 CANADA IC: 2170A-PW3004

Canon FlexTT5 CANADA IC: 2170A-PW3005

Nikon MiniTT1 CANADA IC: 2170A-PW3007

Nikon FlexTT5 CANADA IC: 2170A-PW3008
