10 / 1999

Operating Instructions

WHITE LIGHTNING
RadioRemote One
Wireless Remote Control System

(Includes Instructions for RadioRemote One Transmitter and RadioReciever One)

TRANSMITTER

Backlit **Liquid Crystal Display (LCD)** indicates exact settings of flashpower, bank / channel information,as well as specific model lamp status.

Bargraph indicator shows channel flashpower settings at a glance.

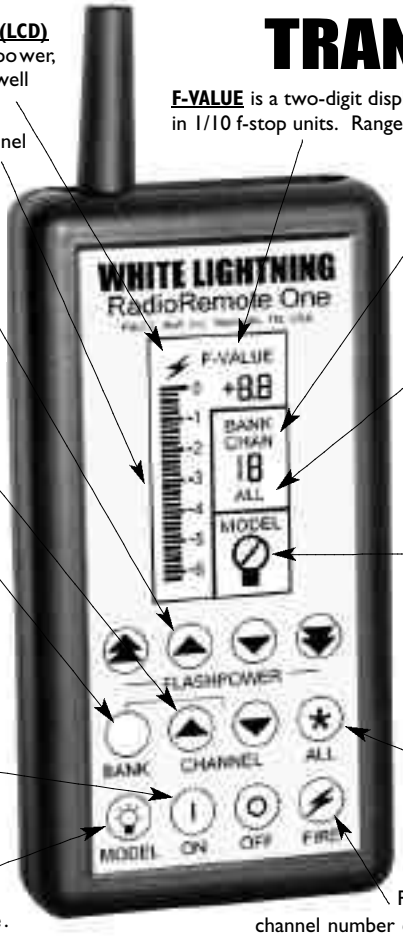
Pressing a **FLASHPOWER** button raises or lowers flashpower. Increments in **1 f-stop (double-arrow)** units or in **1/10 f-stop (single-arrow)** units.

Pressing the **up/down arrow CHANNEL** button selects 1 of 16 possible channels.

Pressing and holding **BANK** while pressing **up/down arrow CHANNEL** buttons selects from Bank 1 to 16.

The channel **ON** and **OFF** buttons set each individual channel state. If a channel is set to **OFF**, it is taken out of the bracketing **(ALL)** mode, it is **not fired** by camera sync and all commands are ignored except **ON**.

The **MODEL** select button scrolls through the three possible model lamp states - ON,OFF or TRACKING mode. The current MODEL status is indicated by the **Model Lamp icon** in the **LCD** window.



F-VALUE is a two-digit display showing channel flashpower in 1/10 f-stop units. Range is from +0.0 to -6.2 f-stops.

BANK/CHAN display shows current channel.While pressing **BANK** button,display shows currently assigned bank. When using (**ALL**) mode, display shows if a channel is over or under range by indicating lowest numbered channel out-of-range.

ALL channel mode indicator becomes active when pressing and holding the **ALL** button. Used for bracketing scenes while maintaining lighting ratios.

The **MODEL** lamp icon indicates one of three states - **ON** = blank, **OFF** = dark,and **TRACKING** = half-bulb.

Pressing the **ALL** button once sends the current settings to all lights. Pressing and holding the ALL button together with any **FLASHPOWER** button,raises or lowers all channels' flashpower (unless a channel is out-of-range - see text)

Pressing **FIRE** test flashes the channel number currently displayed in the **CHAN** window. Pressing ALL before, either once or holding,then pressing FIRE test flashes all lights in system.

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Equipment Supplied:

Each RadioRemote One Transmitter comes supplied with the following items:

• Two "AA" batteries • Velcro strap • Peel-off Velcro adhesive mounting pad
• Stereo mini-plug to 2-prong sync connector • Instruction manual

Each RadioRemote One Receiver comes supplied with the following items:

• DC power supply • Bank and Channel selection screwdriver • Velcro mounting strap
• Peel-off Velcro adhesive mounting pad • 6 ft.modular telephone cable • Instruction manual

RECEIVER

Auxiliary sync connector is located next to AC power connector. Used for flash units not equipped with White Lightning remote jack.

DC POWER connector is located on top apron for easy access. Use only Paul C. Buff, Inc. approved DC power supplies.

POWER ON/OFF switch controls either battery or DC power supply (if connected).

LOW BAT led blinks four (4) times on power up and when battery power has depleted to 1/3 level - about 100 hours. Blinks once each time a command is received from the transmitter.

CHANNEL select switch sets 1 of 16 receiver operating channels in selected Bank.

BANK select switch sets system bank (1 of 16). All channels are inclusive in this selected bank.

White Lightning remote jack connects here with RJ-11 type modular type phone cable. Model lamp blinks when receiver is addressed letting you know system is working.

 Ref # 112299RR1M

Overvie w

The RadioRemote One system provides full wireless remote control of all Paul C. Buff,Inc.White Lightning Ultra, UltraZap and X-Series flash units via the "To Light" jack.Most flash units from other manufacturers may be fired, but not adjusted, from the receiver's auxiliary sync jack via a suitable cable to fit the specific flash unit.

Caution: The RR1 receiver is designed for modern flash units with low current, low voltage (50V max) sync. Some older flash units have voltages as high as 400 volts at the sync terminals and could damage the unit.

Setup

In a typical lightning setup, the transmitter and all receivers should be assigned the same Bank number, with each receiver set to a different one of the 16 Channels. If there is more than one lighting setup in the same area, assigning a different Bank number to each lighting setup eliminates any interaction between the setups.Thus, as many as 16 photographers can each operate up to 16 light units in the same area without interaction. It is important to remember that flash units with built in slave trippers will fire one another, regardless of Bank and Channel assignments, if the slave function is not disabled.This is accomplished in White Lightning units by inserting an unconnected sync cord or a blank "1/4" Stereo Phone Plug" (available at Radio Shack stores) into the sync jack of the White Lightning unit.

If you are operating in a studio environment you might choose to not disable the built in slaves. This will assure that if one receiver happens to miss a fire command its light will fire anyhow via the flash received from the other flashes.This method will, however, not allow you to test fire individual light units from the RR1 transmitter.

Camera Sync

The transmitter should be connected to the camera sync jack via the cable supplied. Cameras with focal plane shutters should be set to 1/60" or slower shutter speed, while leaf shutter cameras may be set to 1/125" or slower. (An optional hot shoe adaptor may be required for cameras lacking a sync output jack).

Operating Rang e

Typical operating range should be from about 100' up to 400' or more and may be affected by a number of factors, including buildings, vegetation, bodies of water and interference from other radio transmitters.

Antennas should be kept vertical and the receivers should be mounted away from large metal, concrete

or water filled objects, with line-of-sight orientation yielding maximum range. At long distances you may have to move the receivers to one side or another to overcome dead spots.

Basic Hardware Setup

1. Install two "AA" batteries (supplied with each transmitter) in the RadioRemote One handheld transmitter by sliding back the battery compartment access door. Make sure to orient the batteries as indicated in the battery well. Transmitter batteries should last several months during normal service. If in doubt, fresh batteries should be installed. Note the transmitter automatically shuts off when not in use.

For fixed installations the DC power supply provided with each receiver should be used. However, two "AA" batteries may be used as an alternative to the DC power supply. The receiver is equipped with a low-battery LED indicator which will blink four (4) times when the unit is first turned on if the battery power is depleted by two-thirds. Otherwise, the LED will blink once to indicate that the receiver is active. Under normal use, the receiver battery life is estimated at approximately 100 hours of use.

2.The RadioRemote One transmitter and receiver(s) are furnished with Velcro pads that can be attached to the back of the unit. The supplied Velcro fastener straps can be used to attach the unit to a stand.

3. Connect each RadioRemote One receiver to a White Lightning Ultra, X-Series,or UltraZap flash unit via the supplied 6 ft.modular telephone type cable. If the cord supplied contains an interference suppressor that end should be plugged into the RR1 unit.Longer cables may be purchased from the factory.

4.An auxiliary sync output jack is available on the top apron of the RadioRemote One receiver. Use this jack to fire flash units not equipped with the White Lightning standard remote control jack via a suitable cable wired for the specific brand of flash.

5. Using the supplied screwdriver, select the desired bank and channel for each of the RadioRemote One receivers in your system. There are 16 possible channels for each of 16 banks of flash units. Remember that all receivers associated with a particular transmitter and camera should be assigned to the same Bank. As shipped from the factory, all receivers are preset to Bank 1 and Channel 1.

6.When using the system in a high light area such as outdoors, or when other flashes may be present, disable the built-in slave trippers in each White Lightning Ultra, X-Series or UltraZap by plugging an unwired 1/4" stereo phone plug (available at Radio Shack and other electron-

ics stores) into the sync jack of each unit.If you do not disable the built in slaves you will not be able to test fire an individual light using the remote transmitter without firing other lights in the studio.

Operating Protocol of the RadioRemote One Transmitter

All operational functions of the RadioRemote One transmitter are indicated by icons, numerical representation and bargraph metering on the backlit LCD display.

These functions consist of the following:

1.The 32-segment vertical bargraph on the left side of the display indicates a resolution of 2/10 f-stop per division. Two steps in change of flash power are required for an increase or decrease in the bargraph reading.

2.The **BAT** indicator is a low-battery indicator and begins to blink when the batteries have depleted approximately two-thirds of available power. The anticipated battery life under normal circumstances is approximately 400 hours of active use.

3. The **F-VALUE** two-digit display, which is the numerical equivalent of the bargraph, has a resolution of 1/10 f-stop. This display increments or decrements on every step of change in flash power. When the **ALL** button is pressed this display indicates simultaneous modifications of all channels (See **"Bracketing"**)

4. The **BANK/CHAN** two-digit display indicates to which Bank and Channel the system is currently assigned.The display will indicate the current channel as the default mode. Pressing and holding the **BANK** button will display the currently assigned Bank.

5.The **ALL** channel indicator is active only when the **ALL** button is pressed. See **"ALL" Functions** below.

6. The **MODEL** icon symbolizes the current state of the model lamp mode for the currently accessed channel and represents one of three possible modes: Full,Off or Tracking mode (half-bulb symbol).

7. The **CAMERA SYNC JACK** is located on the top apron of the transmitter. An accessory cable is supplied with the RadioRemote One for universal connection to most makes of cameras. Note that operating a camera connected to this jack always fires all Channels in the selected Bank, except for those which are programmed to **OFF** (inactive) mode. Firing via the camera sync jack occurs immediately even if the transmitter is asleep.

The response time from the transmitter's receipt of a camera sync signal to the actual firing of units by the receivers is approximately 3 msec (1/333 second). This allows for sync speeds up to 1/60" for focal plane shutters and up to 1/125" for leaf shutters.

8.The LCD display has a backlight feature which may be activated by pressing and releasing the **BANK** button. The backlight remains illuminated for 10 seconds after the last button press.

Factory Settings

As supplied from the factory, the transmitter default settings are set to the following:

- All channels are set to **-2 f-stops** .
- Channel 1 is set to **"ON"** .
- Channels 2-16 are set to **"OFF"** .

These default settings may be recalled from the internal memory at any time by pressing and holding the **BANK** button then pressing the **ON** button. When performing this function,the bargraph on the LCD will instantaneously "kick" upwards.

Last Scene Memor y

The RadioRemote One transmitter contains EEprom memory which automatically stores the current settings each time the transmitter goes into "Sleep" mode (after two minutes of non-use). Thus, if the batteries fail or need to be changed during a session you will not lose the settings.

If you desire to force the storage of current setting (for instance when changing batteries in a hurry) this can be accomplished by pressing and holding the **BANK** button while pressing the single arrow **FLASH - POWER UP** button.

Recalling the settings stored in memory is accomplished by holding the **BANK** button while pressing the single arrow **FLASHPOWER DOWN** button. Recalling the previously stored settings in this manner can serve as an **"UNDO"** function in the event you make a serious programming mistake (but you must do so within two minutes or the mistake will be stored as the current setting).

When loading a scene to memory or recalling a scene, the bargraph on the LCD display will instantaneously "kick" upwards to indicate this function.

The batteries may be removed indefinitely from the transmitter without erasing the last scene stored in EEprom.

Setting the Transmitter Bank

1.While holding down the **BANK** button,press the **CHANNEL** up or down buttons to cause the desired **BANK** number to be indicated in the **BANK** window of the display. This Bank setting will remain once you release the Bank button. Note the transmitter and all associated receivers must be set to the same Bank number for proper operation.

Setting the Cur rent Channel

The current Channel is always indicated in the **Channel** window of the display (except when All or Bank buttons are held down). The transmitter remains set to the same Channel until a different Channel is selected. To change the current Channel, press the **Channel** up or down buttons.

Setting the Active Channels

A Channel must be be made active in order for it to respond to the various commands. You can tell if a Channel is active by looking at the bargraph and **F-Value** display areas as you scroll through the Channels. The absence of these displays indicates the Channel is not active. To make the current Channel active, press the **On** button. To make the current Channel inactive, press the **Off** button. To make all the Channels active or inactive simultaneously, hold down the **All** button while pressing the **On** or **Off** buttons.

Visual Verification

When an active channel is selected or sent data, the model lamp on the associated light unit will blink once to verify it is receiving data and to show you which unit is being addressed (unless the modeling lamp is in **Off Mode**). The LED light on the associated receiver will also blink. This feature can help alleviate the need to remember which lights are set to which Channel numbers. By simply scrolling through the Channels while watching a particular light unit until you see it blink, you can identify which Channel it is set to.

Refresh All Settings

Every time the **ALL** button is pressed, all settings for all active Channels in the selected Bank are resent. Thus you may be certain that the settings shown on the transmitter display have been received by all the receivers by simply pressing the **ALL** button and observing the light units. All the modeling lamps (unless turned off) should blink to acknowledge they have received the current data. All the active receiver LED lights should also blink. To further verify the system, after you press the **ALL** button, press the **FIRE** button. This should fire all of the lights. If either of these tests fail to provide the expected response you should take steps to determine why a particular receiver is not responding.

Setting Model Lamp Modes

1. Setting the model lamp mode for the currently selected Channel is achieved by operating the **MODEL** icon button. The **Model** icon will cycle through the three possible modes: **OFF** (icon black), **ON** (icon white) and **Proportional to Flash** (icon half black, half white).

2. Pressing the **ALL** button while scrolling through the three states of the

model lamp modes using the **MODEL** icon button will select the same model mode for all channels simultaneously. It is recommended that you choose the tracking mode (Model Icon half-active) so that flashpower ratios and changes may be observed via the modeling lamps.

In order to achieve "what-you-see-is-what-you-get" modeling, each light unit must produce the same ratio of modeling lumens to flashpower lumenseconds. (That is to say a unit with more flashpower must have a brighter modeling lamp than a unit of lower flashpower is correct visual preview is to result).

The operating manuals for all White Lightning Ultra, UltraZap and X-Series units contain detailed instructions on how to accomplish this when mixing the different models and units of different flashpower ratings within a lighting setup.

Test-Firing

To **Test-Fire** the currently selected Channel, press the **Fire** button. (Note - firing of individual units is not possible unless built-in slave trippers are disabled - see **Setup** Section above.)

To simultaneously **Test-Fire** all active Channels, first press **ALL**, then press **FIRE** (or press **FIRE** while holding in the **ALL** button.

Adjusting Individual Flashpower Settings

1.With the desired Channel selected, press the up or down **FLASHPOWER** buttons to increase or decrease the Channel's flashpower by either 1/10 f-stop (single arrow buttons) or by 1 f-stop (double arrow buttons). The model lamp brightness will (when model is set to tracking) follow any change in the flashpower setting.

The range of adjustment is from FULL POWER (Display = 0.0 and all bargraph segments are dark), through 1/74 power (Display = -6.2 and only one bargraph segment is dark).

2. In the same fashion, set the flashpower of the remaining channels in your system.

3. You may now quickly review the exact flashpower to which any of the various channels are set by pressing the up or down **CHANNEL** buttons to scroll through the channels while watching the LCD display to indicate the f-stop settings.

The model lamp of each flash unit will blink each time it is addressed, indicating which light is which number, and verifying that the system is communicating.

Modify ALL Flashpower Settings Simultaneously (Bracketing)

1. Press and hold the **ALL** button - the **F-VALUE** display will read 0.0, indicating no modification has been made to the individual channels' flashpower. The **ALL** segment of the LCD display will also become active and the

bargraph is turned off.

2.While continuing to hold the **ALL** button, press either the double-arrow up or down **FLASHPOWER** buttons (for full stop adjust) or the single-arrow up or down **FLASHPOWER** buttons (for 1/10 f-stop adjust). The display should increment up or down with each button press, indicating the exact modification which is simultaneously being made to the flashpower of all active Channels. For instance, a display value of -0.7 indicates that the flashpower of each unit is being reduced by 7/10 of an f-stop, as is the intensity of each modeling lamp (assuming the modeling lamps are in the model tracking mode).

When you release the **ALL** button then look at the flashpower settings you will see that the flashpower of each individual channel has been reduced by exactly 0.7f. Thus, you have reduced the exposure by 7/10 f-stop while keeping exactly the same ratio between light units.

3. If you were to then press the **ALL** button a second time, the display would again indicate 0.0,allowing you to make a further modification to all channels by pressing the appropriate up or down arrow keys and again releasing the **ALL** button.

Over-Range/Under-Range

It is of great importance when bracketing exposures that one does not alter the ratio between flash units, as this would alter what the scene actually "looks" like. Accordingly, it is important that using the **ALL** function does not cause any one flash unit to try to go brighter than **Full Power** (-0.0f),or dimmer than it's **Minimum power** (-6.2f).

Visualize a scene where one light is at **Full Power** (-0.0f), one light is at **Minimum power** (-6.2f) and the rest of the lights are at some value in between. In this scenario, it would be impossible to "bracket" up or down without altering the ratio between the lights, as the brightest light cannot produce more than **Full Power**, while the dimmest one cannot go below -6.2f without going Off.

The RadioRemote One keeps you from making this mistake. Here's how:

1.When using the **ALL** button together with the **FLASHPOWER** up/down buttons, attempting to cause any one channel to go higher than 0.0f or lower than -6.2f will cause the system to stop incrementing or decrementing and to display the **Channel Number** which has reached either **Maximum or Minimum Power.**

2. In the event that more than one channel has reached **Full** or **Minimum Power** and the channel number first indicated on the display has been individually adjusted to allow further bracketing,the next Channel which is at **Full** or **Minimum Power** will now be indicated in the display.

For example, if channels 1 and 2 are at a Full Power **(-0.0f)** and the **ALL** function is used to try to "move' the entire scene to a higher power setting the system will not increment any of the units. The **CHAN** display will first read "1", indicating that Channel 1 is an over-ranged channel. By using the individual flashpower channel adjustment procedure and decreasing Channel 1 to less than 0.0f,the system will now indicate "2" in the **CHAN** display when attempting to use the **ALL** function to increment up.

Channels Pr ogrammed OFF

Channels that are **OFF** during the bracketing procedure will not be changed.

When any Channel is switched to the **OFF** state, then returned to the **ON** condition,the previous flashpower and modeling lamp states are restored by memory in the RadioRemote One transmitter.

Accordingly, if it is desired to bracket only certain lights, the user may temporarily make the remaining lights inactive (**OFF**) while the bracketing adjustment is made, then turn them back **ON**.

Assigning a Channel to the **OFF** mode turns off the associated modeling lamp and prevents the unit from responding to any type of sync signal.

Battery Saving Features

The RadioRemote One hand transmitter utilizes software routines which, when left idle for more than two minutes,put it to "SLEEP" to save valuable battery power. All that is required to "WAKE" the transmitter is to press any button. Pressing a button serves only to wake the transmitter as indicated by the LCD display. The function associated with the first button press when asleep is not executed - a second button press is required to execute the function. Operating the camera, however, immediately fires the lights even when the unit is asleep.

General Care Issues

- Avoid exposure to moisture.
- Avoid temperatures in excess of 110 degrees F or below freezing.
- The batteries should be removed from the transmitter for long term storage.
- The usage of alkaline batteries are recommended for optimum performance.
- When powering the receivers from batteries,the receivers should be turned off when not in use.

Radio Transmission Characteristics

All radio communication links are subject to external interference and environmental operating conditions which may impede system performance in certain circumstances. 'Multipath' reception, which can occur when signals arrive via different paths from the same transmitter, is characterized by "dead zones" in the reception area.The proximity of various items such

as automobiles,bodies of water, metal light stands, vegetation, window screens and such can cause unwanted loss of signals from transmitter to receivers.

Best performance is achieved when transmitter and receiver antennas are oriented vertically.

To alleviate loss of signal because of these effects it might only be necessary to move the location of the transmitter or receiver from a few inches to several feet in any direction.

The RadioRemote One transmitter and receiver operate in the 900MHZ radio spectrum.This frequency range is capable of longer distance reception than lower frequencies. There is still, however, the possibility of interference from nearby strong signals such as radio/television towers, police radios, pager transmitters, etc., as is the case with all low power radiosystems.

Troubleshooting

The RadioRemote One system has been designed for years of trouble-free performance.There are no user-serviceable components inside and any malfunction which cannot be attributed to incorrect battery polarity or exhausted batteries should be addressed by the manufacturer.

Always observe correct battery polarity. The insertion diagram is contained in the battery well on each unit.

Always make sure you have fresh or known-good batteries in the transmitter and in the receivers,if you are not using the DC power supplies.

Frequently Asked Questions

Problem:Bracketing function (All up or All down) will not work.

Check: Most likely one or more of the Channels is at Full Power or at Minimum Power. Turn Off Channels not in use. See Page 8.

Problem:Another photographer in the area is setting off your lights.

Check: Are your slaves disabled (See Page 1). Is the other photographer also using a RadioRemote One?If so, change your lights and transmitter to a different Bank (Page 1)

Problem:One Receiver not responding,other receivers ok.

Check: Is receiver turned On and battery good? Is AC power adaptor connected to receiver but not plugged into an outlet? Are receiver Bank and Channel set properly? Is the problem Channel set to On mode at transmitter? Is receiver out of transmit range?

Problem:No receivers working.

Check: Is transmitter battery good? Is transmitter Bank set correctly? Are the Channels in use in On Mode?

Problem: Camera does not fire units but transmitter buttons do.

Check: If camera sync cord has reversible connections, try reversing them. If using a hotshoe adaptor, make sure the cord comes out the back end of the camera,not the front. Try unplugging sync cord from camera and momentarily short the sync cord contacts together with a metal object (this should fire the system) if so, check camera and hotshoe, if not,either the sync cord or the transmitter have a defect.

Problem:Receiver won't work with another brand of flash.

Check: Make sure the flash unit's sync voltage is less than 50 volts.See Caution on Page 1.

Problem:White Lightning modeling lights don't blink when I send data.

Check: Modeling lamps will not blink if they are in Off Mode.

Problem:Receiver LED blinks when I send data,but flash unit doesn't respond.

Check: Is flash unit connected to Receiver? If so, try another connecting cord,or try another flash unit.

Warranty

The RadioRemote One System carries a 2 year factory warranty covering parts and labor on manufacturing defects. See our website for additional shipping instructions.

The obligations of Paul C. Buff, Inc. is limited to repair or replacement only, and no other warranty is expressed or implied.

Caution: Changes or modifications made to the equipment, not expressly approved by the manufacturer could void the users 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:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.