APPARATUS AND METHOD FOR REMOTE VIEWING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] Applicant claims priority under 35 USC 119 to provisional patent application 60/704,385 filed Aug. 1, 2005. This is a continuation of application Ser. No. 11/440,673 now U.S. Pat. No. 7,609,952, filed May 25, 2006 and is a continuation of pending patent application Ser. No. 12/584,403 filed Sep. 5, 2009.

BACKGROUND

[0002] 1. Field of the Invention

[0003] This invention relates to an energy conserving video monitoring system for monitoring a remote location at a distance. In particular this invention relates to an apparatus and method to view a remote location with a battery powered camera that uses a minimum of energy.

[0004] 2. Description of the Prior Art

[0005] Often times there is a need to remotely monitor a location. For example there may be a need to monitor an elderly person or a young child. It may be desirable to remotely monitor for the presence of mail in a mail box as in applicant's own U.S. Pat. No. 6,879,255. Or it may be desirable to remotely monitor equipment, wildlife or for security for example. In many of these applications there may not be power readily available and a remote camera may need to operate on batteries. In these situations a common problem is that the camera battery can run out of power fairly quickly forcing the user to travel to the remote location to replace a battery. Solar power can be used but can be expensive and unreliable in many locations.

[0006] Applicant's prior U.S. Pat. No. 6,879,255 provides a system for remotely monitoring for mail in a mailbox. The system provides a battery **16** for a remote camera **18** in the mailbox. The system provides a sleep mode, where the camera **18** and lights are not on all the time, only when needed to conserve battery power. But it has been found that the system still draws significant power in sleep mode, waiting for a signal from transmitter **38** to turn the camera on.

[0007] As can be seen, there is a need for a remote monitoring system that will use less power and thus require less effort to operate.

SUMMARY OF THE INVENTION

[0008] The present invention is an instantaneous remote viewing system comprising; a battery powered camera requiring a first voltage to operate and an RF transmitter to send an activation signal to the camera. The activation signal has a duration. A camera power circuit includes a normally sleeping signal receiving circuit and a first timer wherein the first timer periodically activates the signal receiving circuit to check for the presence of the activation signal. The timer turns off the signal receiving circuit if the activation signal is not present and turns on the camera if the activation signal is present and wherein the time the signal receiving circuit sleeps is less than the activation signal duration. Such that the remote viewing system can conserve battery power by keeping the receiving circuit off except for during periods that are slightly shorter than the duration of an activation signal such that an activation signal will not be missed.

[0009] Further the present invention includes a voltage booster circuit to maximize the usable power from a battery. The booster will boost battery voltage up to at least a minimum required by the camera.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] In the drawings, closely related items have the same number but different alphabetic suffixes.

[0011] FIG. **1** shows the apparatus of the preferred system.

[0012] FIG. **2** shows a block diagram of the circuit of the device.

[0013] FIG. **3** shows a flow chart for the operation of the device.

[0014] FIG. **4** shows a comparison of the activation signal to the timer period

DESCRIPTION

FIG. 1

[0015] FIG. **1** shows the remote viewing camera system **10**. The remote viewing camera system **10** can include a control transmitter **20**, a remote camera system **30**, a receiver **40** and a monitor **50**. The control transmitter **20** can include a button **22** used to activate the remote camera system **30**, to wake it up from a sleep mode. The control transmitter **20** can also include buttons **24** to remotely control the position of the camera **34**, button **26** to control sound transmitted from remote camera system **30** and button **28** to control a light **32** associated with the remote camera system **30**. The control transmitter **20** can include an antenna **29** to send an encoded control signal S**1** to remote camera system **30**.

[0016] The remote camera system **30** can include a light **32** and a camera **34**. The camera can include a dome housing **36** and the camera will include camera control circuit **38**. The remote camera system can send a signal S**2** to a receiver **40** that can receive the signal S**2** and convert it to a format that can be displayed on a monitor **50** that might be a computer or home TV.

FIG. 2

[0017] The camera control circuit **38** receives a signal S**1** from control transmitter **20**. The camera circuit control **38** can include a battery **100** that provides the main power source. The battery **100** can be a rechargeable battery that has a solar powered charger **102**. Power from the battery **100** can be applied to two timer circuits **110** and **112**. The timer circuit **110** runs constantly but uses very little power. The timer circuit **110** counts a preset amount of time, typically in the range of a few seconds and then activates switch **120** to activate the receiver decoder circuit **122**. The receiver decoder circuit **122** still uses very little power but more than the timer circuit **110**. When activated the receiver decoder circuit checks for the presence of activation signal S**1**. If the activation signal S**1** is present then the receiver decoder circuit **122** sends a trigger signal S**3** that activates the second timer **112** that in turn closes switch **130** to apply camera power **132** to remote camera system **30** which includes camera **34** and video transmitter circuit **140**. Power **114** applied to the timer circuits **110**, **112** can be very low, power **116** to receiver decoder circuit **122** may be higher and power **132** to the remote camera will be the highest with the camera **34** requiring voltage in the 8 volt range for example. When the signal S**1** is no longer present and when a set time has passed