

Laser Window Bounce Systems

The following plans data shows how to interface any optical laser along with a sensitive light to sound detector/receiver into a system capable of listening to vibrations from a laser illuminated reflecting surface. This property makes feasible listening to mechanical abnormalities of moving machinery, dangerous bursting pipes, volcanic activity, nuclear reactors -all from a safe distance. Monitoring and acoustically listening to a premise without ever illegally entering as would be necessary for purposes of installing a bug or similar device now is possible. The principle is sound, however to achieve optimum results may sometimes be difficult due to the many variables often encountered. These variables strongly depend on the optical and mechanical properties of the reflecting surface, positioning of the "laser illuminator" relative to the "light detector" and quality of the target sounds both in intensity and wavelength.

The system also can be used as a long range optical communications system allowing a point to point secure type voice communication link. Normal voice and sounds between 300 to 3000 Hz are clearly heard.

Even though the use of a visible red light is shown and used in our LWB series low cost science project system negates covert use, the builder must still realize that using a system as described for acoustical surveillance violates federal law #90-352 and may also be in violation of certain state and local laws. Our advise to this point is when in doubt consult your state Attorney General as to your bottom line objective whether it be for a science fair project, research and development or individual experimenting.

Information Unlimited guarantees that this data has been proven authentic and performs as advertised. We will not refund kits, plans or parts, but will assist if you have problems. Assembled lasers and detectors are sold on an unconditional basis where we will only repair or guarantee the completed device to be free of factory defects or workmanship for a period of 30 days. We do offer a builders assistance program for those who cannot obtain proper performance from their kit at a set hourly rate.

Laser Window Bounce systems demonstrate an amazing property of laser light. Similar systems used in high profile surveillance and counter surveillance applications cost tens of thousands of dollars and are usually beyond the buying capacity of most individuals and of questionable legality to own and use. Our low cost science project laser window bounce system uses a low power visible red laser that prevents illegal use of the product. Circuitry and construction are orientated to the experimenter/science project market where demonstration of the concept is the intended application rather than bottom line performance. None the less when properly setup, surprising results can be obtained. Therefore you must use caution as an interesting and educational science project could result in a legal problem for violating a persons privacy!

Our system uses two methods:

The ***DIRECT REFLECTION (DR)*** method is where positioning of the laser transmitter and receiver is at two defined locations being that dictated by Snell's Law. This approach can be cumbersome and is limited due to positioning problems. It does provide maximum range of operation. The DR method provides a high level of signal that may require optically attenuating with polarized filters etc.

The ***SCATTERED REFLECTION (SR)*** method attempts to use the signal provided by the light where the laser hits the surface. This is the spot you usually see at any relative position. It can be many times weaker than the DR but eliminates the problem of positioning. The laser transmitter and receiver can be mounted on the same frame and can be aligned accordingly to view the target point. Obviously large optical lenses can greatly enhance this method.

The surface of reflection plays a major role in performance as well as the actual position of the laser spot. Double and triple glazed windows further complicate the situation. We can only suggest patience and perseverance to become familiar with the “tricks and sometimes black magic” in optimizing performance of this system.

Assembled laser and receiver modules may be placed on videotripods and temporarily aligned for limited performance demonstration systems. They may also be enclosed as shown in the instructions for use as a field worthy device with a potential range of up to 500 feet. Low cost audio surveillance science project or useful device for listening to power line faults, over pressurized pipes etc.

Plans for all systems

LWB9 Plans.....\$25.00

Science Project Demonstration System

You set the modules up on video tripods (not included) and by carefully aligning with a window, hear outside sounds now demonstrating the concept.

LWB6K - Includes **LPROJ1K** Visible Red Laser Kit and **LLR3K** Optical Receiver Kit for 100' Demo/Science Project.....\$129.95

LWB60 - Includes **LPROJ10** Visible Red Laser and Assembled **LLR30** Optical Receiver Ready to Setup and Use.....\$159.95

Available Electronic Modules for Field Usable Listening Systems

Intended for those wanting to build their own field usable system. You now build the main enclosure along with the optical “adjusting and positioning” mechanism. You can either use easy to machine plastic material or the more difficult to machine but more stable aluminum or other metal. The choice is up to the builder understanding that stability and ease in aligning is paramount in final application of the device. The optics used also plays an important role in determining performance. Overall construction therefore will greatly determine performance and range. Includes 30 milliwatt class 3b infra-red illuminator, high sensitivity optical receiver with voice filter, visible red alignment laser and test tone generator, basic optics and complete plans and instructions. A properly built system can pick up sounds up to 500 feet!!

LWB9K - Includes **CWL2K** laser kit, **LLR4K** receiver kit and above peripherals.....\$349.95

LWB90 - Includes assembled **CWL20** laser and **LLR40** receiver with above peripherals.....\$499.95