

TripleBright II

Warranty and Instructions

Terms Used in This Warranty and the Instructions

Light – This always refers to the complete light assembly, which is the housing, cover, and everything inside the housing. Sometimes referred to just as the **TripleBright II** (US Patents 6,479,947 and 6,838,837). There are 8 different models of single lamp **TripleBright II**. Model **FSL** is a **TripleBright II** with filters short wave and lamp short wave. **FSLM** is a **TripleBright II** with filters short wave and lamp medium wave. **FLL52** is a **TripleBright II** with long wave filters and a LW350 lamp. **FLL68** is a **TripleBright II** with long wave filters and a LW370 lamp that peaks at about 368 nm. **WOCLS** is a **TripleBright II** without cover or filters but with a SW lamp. **WOCL185** is a **TripleBright II** without cover or filters but with a special SW lamp (LS-60-185) that also transmits the 185 nm wavelength. **WOCLL52** is a **TripleBright II** without cover or filters but with a LW350 lamp. And the **WOCLL68** is a **TripleBright II** without cover or filters but with a LW370 lamp. Note a **Dual TripleBright II** is also available with two lamps in 13 different models.

Lamp – This always refers to the single bulb, tube or light tube. The **LS-60-254** is the short wave (SW) lamp (bulb) and has a peak output at 253.7 nm, the **LM-60-306** is the medium wave (MW) lamp and has a peak output at approximately 312 nm, the **LL-60-352** is the long wave (LW350) lamp and has peak output at approximately 353 nm, and the **LL-60-368** is the LW370 lamp and has a peak output at approximately 368 nm. There is also a SW **LS-60-185** lamp that is primarily an ozone-producing lamp at 185 nm.

WARRANTY

The UV SYSTEMS, Inc. **TripleBright II** (US Patents 6,479,947 and 6,838,837) is guaranteed to be free of defects in materials, workmanship, and manufacture for one (1) year from date of purchase. Consumable and disposable products, including –but not limited to –lamps (light tubes), filters, and fuses are guaranteed to be free from defects in workmanship and materials for thirty (30) days from date of purchase. If equipment failure or malfunction occurs during the warranty period, UV SYSTEMS, Inc. will examine the inoperative equipment and have the option of repairing or replacing any part(s) which, in the judgment of UV SYSTEMS, Inc., was (were) originally defective or became so under conditions of normal usage and service.

No warranty shall apply to any instrument or light, or part thereof that has been subject to accident, negligence, alteration, abuse, or misuse by any user. Moreover, UV SYSTEMS, Inc. makes no warranties whatsoever with respect to parts not supplied by UV SYSTEMS, Inc. or that have been installed, used, and/or serviced other than in strict compliance with the instructions in the operation manual supplied to the end-user.

In no event shall UV SYSTEMS, Inc. be responsible to the end-user for any incidental or consequential damages, whether foreseeable or not, including, but not limited to property damage, inability to use the equipment, lost business, lost profits, or inconvenience arising out of or connected with the use of instruments or lights produced by UV SYSTEMS, Inc. Nor is UV SYSTEMS, Inc. liable or responsible for any personal injuries occurring as a result of the use, installation and/or servicing of the light.

WARNING

When the short wave or medium wave **TripleBright II** is operating, huge amounts of ultraviolet (253.7 nm, UV-C for SW; and 312 nm, UV-B for MW) energy are emitted which may produce sunburn on the skin and/or conjunctivitis to the eyes upon exposure to direct or reflected radiation. Never look into a lighted SW or MW **TripleBright II** light because it can quickly sunburn your eyes and skin. Always position the **TripleBright II** so that the ultraviolet light shines away from you and others. The **TripleBright II** may emit much more

ultraviolet than you are used to. It is suggested that protective goggles (such as UV SYSTEMS, G2, or equivalent) or full face shields be used to block ultraviolet radiation from reaching your eyes, and that your skin be protected from direct exposure to the light's ultraviolet rays.

TripleBright II Compared to the original TripleBright

The SW TripleBright II is over 20% more powerful than the original TripleBright.

The MW is over 27% more powerful.

The LW is over 36% more powerful.

And the TripleBright II weights 40% less than the original TripleBright.

Before using the TripleBright II

REMOVE THE RED TAPE FROM BOTH ENDS OF THE LAMP

The red tape is used to hold the lamp in the socket only during shipping

A. OPERATION INSTRUCTIONS FOR THE TripleBright II

You are now the owner of the newest ultraviolet light specifically designed for fluorescence displays. For short wave it uses a custom made quartz lamp that is very resistant to bulb solarization. For medium wave it uses a custom made lamp with a special erythema glass and a medium wave phosphor that peaks at approximately 312 nm. For long wave it uses one of two custom made lamps with a standard soda-lime glass. One has a long wave phosphor that peaks at approximately 352 nm (LW350) and the other lamp has a phosphor that peaks at approximately 368 nm (LW370). These High Output (HO) Rapid Start hot cathode lamps are the first new sources of ultraviolet for lights that are specifically designed for fluorescence displays. The **TripleBright II** (US Patents 6,479,947 and 6,838,837) has a special circuit that supplies the cathode heat or filament power (yellow power cord). With this special circuit the **TripleBright II** can be turned "on" and "off" thousands of times without affecting the life of the lamp. The yellow power cord supplies the filament power. The black cord supplies the high voltage necessary for the lamp to light; the switch on the **TripleBright II** is in series with the black cord. That means that the yellow cord must be plugged in and powered up at least 20 seconds before the **TripleBright II** should be turned "on". The **TripleBright II** has instant start operation, which means that no starters or extra switches are needed to turn the lamp "on." This means that the black cord can be plugged directly into an external electrical or electronic timer for timing applications and the "on-off" rocker switch turned "on". The "on-off" rocker switch is behind the baffle and just above where the black cord enters the blue **TripleBright II** housing. To repeat: it is important that the yellow cord must be plugged in and powered up at least 20 seconds before the black cord is plugged in or powered up. The yellow cord can be left plugged in all the time without significant effect on the lamp in the **TripleBright II**; however, you can unplug it if you will not be using the light for weeks at a time. The yellow power cord has no switch in the circuit; therefore to disconnect filament power to the lamp the cord must be unplugged. Also only the black cord should be plugged into a switched wall outlet or external timer. The TripleBright II can be operated from 115V 60 Hz or 50 Hz electrical power.

Inspect the **TripleBright II** to make sure there is no shipping damage. Styrofoam "peanuts" or bubble pack might be used to protect the **TripleBright II** during shipping. All that protective material (Styrofoam "peanuts" or bubble pack must be removed to clear the fan opening and air exit before the light is operated. Make sure you remove the red tape that holds the lamp in the sockets; the tape is only used to make sure the lamp does not come loose during shipping.

B. INSTALLING THE TripleBright II IN YOUR DISPLAY

The **TripleBright II** comes with four built in external tabs that accept small chains or wire to hold the light to the top of your display. By adjusting the length of the chains or wire you can tilt the light to almost any direction. There also are four tapped 8-32 nuts on the back of the unit. The **TripleBright II** weighs about 9 pounds.

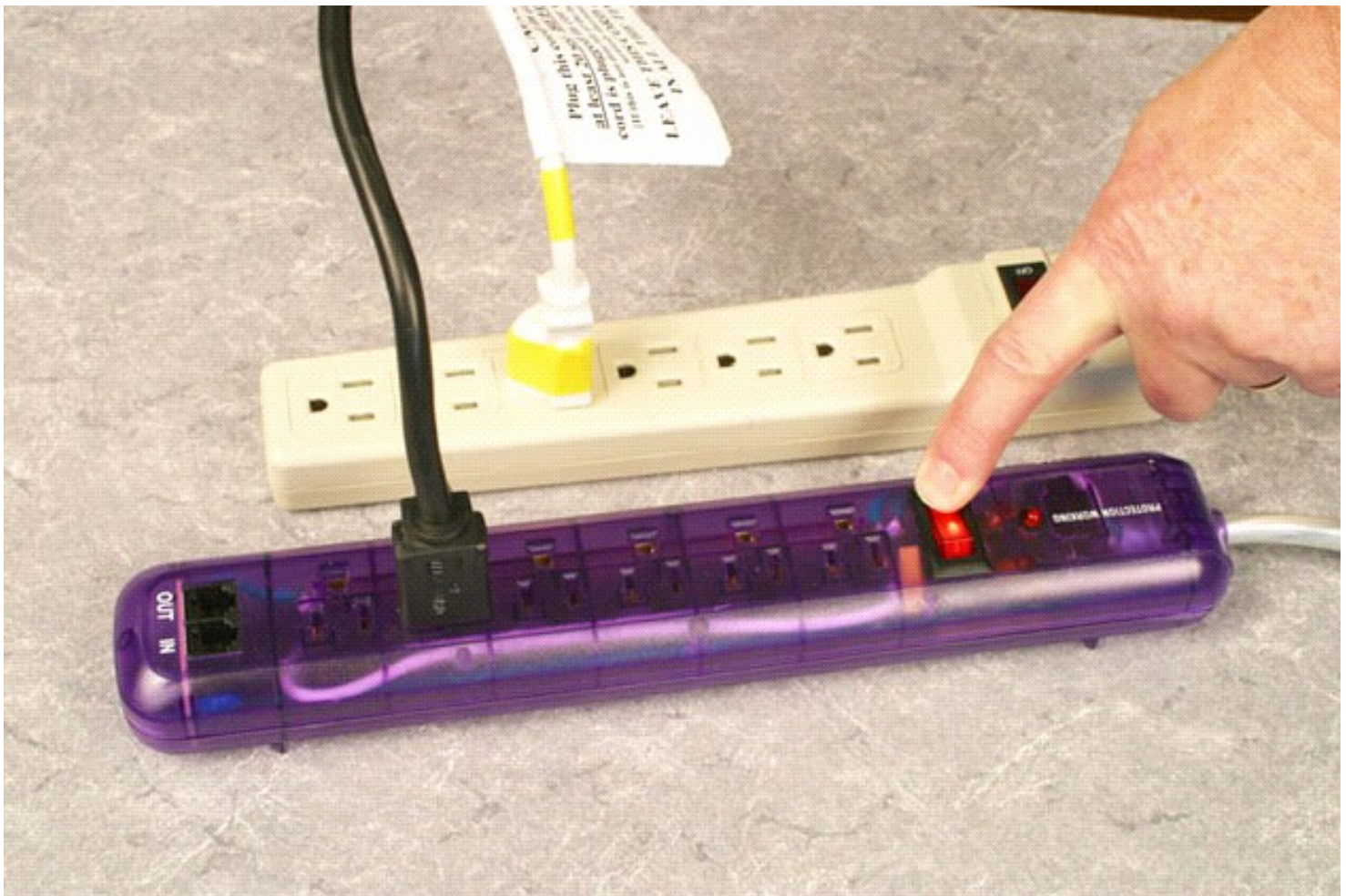
C. CONNECTING THE YELLOW CORD TO PERMANENT 115VAC POWER

The cord with the yellow tape around it is called the yellow cord and it must be plugged in first to non-switched constant 115V 50 Hz or 60 Hz power. The yellow cord powers the filament transformer that supplies the filament voltage. The yellow cord should be plugged in at least 20 seconds before the **TripleBright II** is turned “on”.



NEVER PLUG BOTH CORDS INTO THE SAME POWER STRIP

Always make sure the yellow cord is powered “on” at least 20 sec. before the black cord.
See next photo.



CONNECT THE CORDS TO TWO DIFFERENT POWER STRIPS OR OUTLETS
This allows the yellow cord to be turned “on” for 20 seconds before the black power cord is turned “on”.

D. CONNECTION THE BLACK CORD TO 115 V 50 Hz or 60 Hz POWER

The black power cord can be plugged into a switched power outlet or into a timer for remotely operating the **TripleBright II**. One such timer is the T-12 Timer made by UV SYSTEMS. The rocker switch on the light (behind the baffle and above the black cord) can be used to turn the light "on" or "off" rather than unplugging the black power cord from the outlet.

E. COOLING FAN

The **TripleBright II** has a built in cooling fan to maintain the lamp at its most efficient operating conditions by maintaining an optimum mercury vapor pressure inside the lamp. By operating at its most efficient mercury vapor pressure the UV output does not decrease as the lamp warms up. This is a common problem with many other display lights in that they heat up and the UV output decrease, but not with the **TripleBright II**. The **TripleBright II** should be installed in a display or enclosure that has at least two openings of about 12 square inches at each end of each light (24 inches total per light). This will allow cooler air to be drawn in at one opening near the intake and warm air to be exhausted at the other end by the other opening. The fan operates any time the lamp is “on”.

F. REPLACING THE SHORT WAVE FS-60 FILTERS and OTHER FILTERS

Reasons you might want to replace the glass filter in your **TripleBright II** are included below. If you are already familiar with this subject, skip down to the next paragraph.

Reasons you Might Want to Replace the SW Filters

Because the **TripleBright II** is so powerful, more short wave ultraviolet passes through the **FS-60** filters than in many other displays lights on the market. Short wave ultraviolet radiation causes a chemical reaction in the filter glass that reduces the transmission of the 253.7 nm [UV] wavelength with time. This is called solarization. The visible light that you can see transmitted through the filter does not change as the filter solarizes, and so in no way indicates the degree of solarization. This solarization effect is a function of the amount and duration of short wave ultraviolet light exposure. In addition, if the light is stored in a damp or humid environment, a white coating can form on the glass that also causes a reduction in 253.7 nm UV transmission. The coating is caused by a chemical action with the moisture in the air. The coating can be cleaned off, but the glass under the coating may already been affected, which might result in reduced transmission. Fingerprints will also absorb small amounts of UV so these could be cleaned off if desired. The filters can be checked periodically for solarization by obtaining an ultraviolet radiometer and measuring the actual 253.7 nm transmission. Or for a small fee, the filters can be removed and sent back to UV SYSTEMS to have its transmission measured. When the light is not being used, turn it off to reduce the filter's exposure to excessive ultraviolet. Turning the light "on" and "off" frequently has no effect on the life of the lamp, but it has a positive effect on the life of the filters (with less ultraviolet exposure). The filters in the **TripleBright II** should last a long time depending on how humid the environment is. Recent tests indicate that the life of the **FS-60** filters is about 7,000 hours (based on a transmission of about 25% at end of life). When not in use, the light should be stored in a dry environment to protect the filters.

Removing Glass UV Filters

To remove the glass **FS-60** SW filters (or FL-60 LW filters); first unplug both the yellow and black power cords. Then: (1) Twist the knurled knob attached to the cover that holds the cover on. (2) Let the cover swing free. (3) Slide the cover (on the slip hinges) towards the cord end of the light and remove the cover. (4) Remove the filters one at a time. Note, that the points of the sheet metal screws are very sharp so be very careful. (4-A) Remove the three screws on one side of a filter bracket and loosen the three screws on the other side. (4-B) Remove one of the metal filter bracket holders and slide the filter out. (4-C) Do the same for the second filter. Note the filter brackets have aluminum "fingers" that hold the filters. Before installing new filters, you may wish to put some spacer or black tape between the two filters so there will be no glass-to-glass surfaces touching. The tape now between the old filters might degrade. To install a filter just reverse this procedure. Use care when installing a new filter so that the aluminum cover or metal filter bracket holders do not put undue stress on the filter, but make sure that the fingers of the brackets are over the filter (and not just on the edge of the filter). The recommended method to attach the filter brackets is to tighten each screw a little bit, going around to all six screws several times, rather than tightening first one completely and then another screw. Tighten only enough to hold the filters gently in place.

G. REPLACING THE LAMP

To either remove or install a **LS-60-254**, **LS-60-185**, **LM-60-306**, **LL-60-352**, or a **LL-60-368** lamp, first unplug both the yellow and black 115V AC plugs. Twist the knurled knob attached to the cover that holds the cover on. Let the cover swing free. Reach in and twist the lamp 90° along its axis and remove it from the lamp holders. Note, the white lamp holders are positioned exactly a set distance apart; however, every lamp has a very slight tolerance in length so some lamps may fit tightly in the lamp holders, and some might be looser. The lamp manufacturer suggested that gloves be used when installing a new SW lamp to keep fingerprints off of the lamp envelope because the oil in your fingers might block some transmission of SW ultraviolet light. Or if you do not use gloves, the manufacturer suggested that alcohol be used to wipe any finger marks off the SW lamp after the lamp is installed.

However, it is estimated that any finger oil would only have a very slight absorbing effect on the SW UV, maybe only 1/2% to 3%, so gloves are not absolutely necessary. Gloves are not required for the MW, LW350, or LW370 lamps (since those wavelengths will pass through finger oil).

The **TripleBright II** has a special circuit in it that allows the lamp to be turned “on” and “off” thousands and thousands of time without affecting the normal life of the lamp. However, the lamp will fail at some time, usually by failing to come “on”. A life cycle test was conducted that operated three lamps, a **LS-60-254**, a **LM-60-306**, and a **LL-60-352** with each “on” for about 5 minutes and then “off” for about 39 seconds. The life test was stopped in Dec. 2000, without any lamp failures and they had over 94,000 “on-off” cycles and a total of over 7,588 “on” hours each. Another life test had three **LS-60-254** lamps each “on” for 8.2 seconds and “off” for only 1.8 seconds. That test was stopped in March 2005, with over 2.52 million “on-off” cycles and a total of over 10,321 “on” hours without any failure!

The UV output of the **LM-60-306**, **LL-60-352**, and **LL-60-368** lamps will be reduced as the lamp is used. One UV depreciation test indicates that the **LS-60-254** lamp will have about a 20% reduction in about 7,000 hours. Those same tests indicate that the **LL-60-352** lamp will have about a 22% reduction, and the MW **LM-60-306** lamp will have about a 55% reduction both in about 7,000 hours.

H. PERIODIC MAINTENANCE

Because the fan draws in air from the outside of the case, it is important to clean the inside of the TripleBright II from time to time. Every six months (depending on the environment) is suggested. The reflector, lamp, and filters should be wiped off with a clean cloth to remove any dust. Also the SW UV might affect the blue powder coat finish that is on the inside of the cover (in direct exposure to the SW UV) and turn it into dust, which just adds to the dust that needs to be removed.

I. MAJOR PARTS LIST FOR TripleBright II

SW Filters (2 required)	FS-60
LW Filters (2 required)	FL-60
Lamps - SW	LS-60-254
SW (Ozone producer)	LS-60-185
MW	LM-60-306
LW350	LL-60-352
LW370	LL-60-368
Ballast	Workhouse WH33-120-L

J. Other UV SYSTEMS products and accessories to the TripleBright II

Automatic Timer **T-20**
Electronic timer that can control up to 20 UV lights and up to four different types (such as LW350, LW370, MW, or SW) of lights and also ramp up and dim incandescent lights.

Three different outputs are standard. Designed for the **TripleBright II**, but will also work for any Instant Start or Rapid Start fluorescent type light that does not require starters.

Contrast and Safety Goggles

GB

These goggles will block all ultraviolet from getting in your eyes. A necessity for every collector.

Replacement filters

FILTERS

13 sizes of replacement SW or LW filters for your other ultraviolet light assemblies.

Replacement lamps (tubes)

LAMPS

23 sizes of replacement SW, MW, LW350, or LW370 lamps for your other ultraviolet light assemblies.

Other SW UV lights

***SuperBright II* model 3254**

One of the most powerful hand-held SW UV light available.

MW UV light

***SuperBright II* model 3312**

One of the most powerful hand-held MW UV light available.

LW UV lights

***SuperBright II* model 3351
or model 3368**

Two of the most powerful hand-held LW UV lights available.

K. MY "MOST IMPORTANT LIGHT"

I want to give recognition to the most important light in my life, Jesus Christ, who said, "I am the world's light. No one who follows me stumbles around in the darkness. I provide plenty of light to live in." -John 8:12 "The Message" translation.

Don Newsome

**Schematic of UV SYSTEMS, Inc.
TripleBright II Display Light**

FLUORESCENT MINERAL SOCIETY, INC.

The Fluorescent Mineral Society, Inc. (FMS), it is an international organization for those interested in the fluorescence and luminescence of minerals. It is not connected in any way with UV SYSTEMS. The FMS members keep in touch through the *UV Waves*, a bimonthly newsletter with articles about fluorescent minerals and their localities, ultraviolet lamps, and related matters. The yearly or biennial *Journal of the Fluorescent Mineral Society* publishes technical articles of lasting interest. FMS members have regular regional meetings, and get together at major mineral shows like those at Denver, Tucson and Franklin, NJ. The FMS was founded in 1971, and incorporated in 1993.

To receive a free application to the FMS contact UV SYSTEMS or contact Jan Wittenberg at 23101 Valerio St., West Hill, CA 91307 USA or on the web at: <http://www.uvminerals.org>
Or communicate by Internet mail with Jan Wittenberg (FMS President) at president@uvminerals.org

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