

**Sciencetech LightLine Solar Simulator  
A1, AX, and A4  
&  
601-/611- Series Power Supply  
User Manual**

V2.0.3

# Table of Contents

1. Introduction .....	4
2. Power Supply and Ignitor .....	5
3. Shipping and Unpacking .....	6
3.1 Unpacking.....	6
3.2 Included Components .....	6
4. Lamp Handling and Warning.....	7
4.1 Arc Lamps .....	7
4.2 Mechanical Handling.....	7
5. Arc Lamp Installation .....	10
5.1 LH Arc Lamp Installation (A1 and AX LightLine) .....	10
5.2 XLH Arc Lamp Installation (A4 LightLine).....	12
5.3 Fiber Installation (A1 and A4 LightLine) .....	16
5.4 Filter Installation.....	16
5.5 Arc Lamp Alignment Procedure .....	18
5.5.1 LH-E Lamp House Alignment.....	18
5.5.2 XLH-E Lamp House Alignment .....	19
6. Accessories Hookup .....	20
6.1 Filter Wheel Hookup .....	20
7. Power Supply Description and Operation.....	21
7.1 Configuration of 601 and 611 Series Power Supplies .....	21
7.2 Description of Configurations .....	21
7.3 Making Connections .....	23
7.3.1 601- Power Supply Connections.....	23
7.3.2 611- Power Supply Connections.....	24
7.4 Power Supply Start-up.....	25
7.4.1 Understanding the Main Screen.....	25
7.4.2 Starting the Lamp .....	25
7.4.3 Touchscreen Button Overview .....	25
7.4.4 Shutter Control.....	27
7.4.5 Run Time Window .....	27
7.4.6 Setting system time.....	27

7.5	RS232 Output.....	28
7.6	Notes on Voltage Selection.....	28
7.7	Notes on Fuses.....	28
7.8	Notes on Cords.....	28
8.	Important Notice.....	30
9.	Warranty and Assistance .....	32

# 1. Introduction

The A1, AX, and A4 LightLine are built on the proven Sciencetech LH-E and XLH-E lamp housings respectively. The LightLine adds a module to the front of the housing that provides a shutter, filter, and other optional accessories before focusing the light into an optical fiber bundle.

## 2. Power Supply and Ignitor

**Please read this manual completely before operating the unit.**

Sciencetech 601- and 611- series of DC power supplies are typically used to deliver power for xenon lamps from 75W to 1600W. The output is adjusted through a touchscreen panel located on the front of the power supply and current, voltage, and power are displayed. These power supplies are fully adjustable from 63% to 105% of the maximum current rating and offer protected output against short circuit or abnormal operating conditions.

The 601- and 611- power supplies are designed for operation with Sciencetech supplied short arc lamps, but can be used with lamps from other manufacturers as well. However, they are not compatible with all arc lamps in the specified wattage range.

These power supplies are designed for use with the LH (601-) and XLH (611-) lamp housings only. These arc lamp housings also require power for their air cooled fans in addition to the lamp. The single connection to the lamp house provides power for the arc lamp and for the cooling fans in the lamp housing.

The power supply has a single 7W2 (LH) or 9W5 (XLH) connection, as does the lamp house of the opposite gender. This single cable provides all power for the lamp, cooling fans, and communication.

The arc lamp housing must be cooled during operation. The lamp house fans need to be enabled in the touchscreen interface for the lamp to ignite. If this power supply is used with a water cooled arc lamp housing or a third party arc lamp housing that does not need the air cool fan power outlet, a dummy cable must still be connected to it to defeat the safety interlock. If the safety interlock is disconnected, the power supply simply cuts power to the lamp. There is no indicator or audible warning.

The power supply can be configured for either 115VAC-60Hz (up to 1000W lamps) or 240VAC-50Hz input and should be specified at the time of ordering.

## 3. Shipping and Unpacking

### 3.1 Unpacking

The instrument is packaged in such a way as to minimize damage during transport. If the package is damaged or if after unpacking any signs of damage become apparent, a claim should be filed with the carrier immediately.

If the instrument must be returned, contact Sciencetech Inc. for approval prior to shipping. A full description of the reason for return should be included.

Inspect the exterior of your system for any noticeable defects. If any are present, contact Sciencetech Inc. immediately.

The lamp is uninstalled before shipment. Before the lamp installation identify what type of lamp will be used.

### 3.2 Included Components

The packing box should contain the following components:

- Sciencetech arc lamp housing and illuminator housing
- Homogenization optics
- Sciencetech arc lamp power supply
- Power supply cable
- Requested lamp
- Request filter

To prevent damage during shipment the arc lamps are shipped in a separate box and must be installed before operating the unit.

## 4. Lamp Handling and Warning

### **WARNING:**

**Before servicing the lamp housing, be sure to disconnect the electrical connections and completely drain the cooling system (if water cooled). Make certain the lamp is at room temperature. Also remember to wear eye and face protection when working around arc lamps. Follow the manufacturer's general information sheets for handling and operating the bulb.**

### 4.1 Arc Lamps

Lamps purchased directly from other manufacturers may not meet our specifications for operation and may cause permanent damage to the housing and to the reflector. Use of such lamps will void the warranty.

### **WARNING:**

**Arc lamps can be used for a MAXIMUM of 1000 hours of total use. Exceeding 1000 hours can cause damage to the quartz bulb and may result in explosion of the lamp.**

The gases inside arc lamps are under extreme pressure, especially during operation (from 10 atmospheres for large lamps, up to 30 atmospheres for small lamps). Therefore, the lamp housing must be closed at all times during operation. Arc lamps emit ultra-violet radiation and therefore precautions must be taken to ensure protection from ultra-violet radiation emissions. Special storage cases are provided to eliminate possible hazards during shipping and handling. **Safety goggles and soft cotton gloves should be worn when removing and installing lamps. Never touch the quartz envelope with bare hands; such handling may lead to the deterioration and premature failure.** If accidentally handled, clean the lamp surface with an alcohol swab to remove any residue.

### **WARNING:**

**Never look directly at an operating lamp; severe eye injury will result. Wear UV protective lenses, such as welder's goggles, when working on or around lamps.**

### 4.2 Mechanical Handling

A short arc high-pressure xenon lamp is used. The arc lamps are extremely robust. They must withstand the mechanical stresses exerted by their heavy electrodes – especially the anode, which can weigh up to 400g – and the high internal pressure of up to 30 bar (even more in low-wattage lamps). However, they are still made of glass and need to be handled accordingly; they must be protected against shock, impact and excessive force. Certain precautions must be observed when handling them.

Arc lamps are supplied in a safety cover. This protects users from possible spontaneous or induced bursting of the lamp. There is enough energy stored in the lamp bulb to send quartz splinters flying several meters across a room.

**When the lamp is installed, its safety cover must not be removed until after it has been fitted in the lamp housing and shortly before the housing is closed. Wear protective goggles or complete face protection covering the arteries and veins of your neck, such as a transparent plastic mask.** If the design of the lamp housing does not permit the lamp to be fitted together with its safety cover, it should be wrapped in strong lint-free cloth.

In some types of lamps, the safety cover acts as a tool for screwing the lamp into its holder at the cathode end. **Under no circumstances must force be exerted on the bulb during installation. For example, screwing in the cathode base by holding and turning the lamp at its anode base is grossly negligent.**

The lamp may only be clamped in position at one end in order to allow for expansion and distortion of the housing. Small (short) lamps can be left free and unsupported at the other end. Larger (longer) lamps must have a soft, flexible support, which calls for a mechanical solution. It should support the lamp but allow unrestricted expansion, including expansion perpendicular to the lamp axis.

Lamps may only be stored if suspended freely from their bases in their (open) safety covers. Leaving them to roll around unprotected on a desk or shelf can result in microcracks in the surface of the quartz glass, causing lamps to burst later on.

**If the lamp is inadvertently operated inside its safety cover the sleeve will melt within a few seconds and the lamp will be unusable.**

When removing lamps the reverse procedure must be followed: first put the safety cover on the lamp, then remove the lamp.

Similar precautions must be observed for connecting arc lamps electrically as for handling them mechanically. All electrical connections must fulfill the criteria for high-current connections. Connecting components must be clean and offer the maximum contact area. In cases of doubt, it is better to recondition or preferably replace the contacts rather than risk lamp failure due to corroded and overheated contacts. In most cases good electrical contact is synonymous with good thermal contact to dissipate the heat produced by the lamp.

**Care must be taken to ensure that the lamp is connected with correct polarity; the positive pole of the rectifier must be connected to the base marked (+), the negative pole to the base marked (-). Incorrect polarity results in total lamp failure within a few seconds;** the cathode fuses over immediately as a result of being overloaded while acting as the anode.

**Arc lamps must only be held by their base. Damage to the glass may cause the lamp to break during later operation.**



If the quartz bulb or the shafts should ever be inadvertently touched with bare fingers (which should never happen because unprotected lamps should only ever be handled with soft cotton gloves), the fingerprints must be removed immediately. A lint-free alcohol-moistened cloth is best for this, after which the lamp should be rubbed dry, taking care not to scratch the quartz glass surface. If fingerprints are not removed they burn into the quartz glass surface where they act as a seed for ever-expanding recrystallization of the glass. This causes the glass to lose its strength and increases the risk of bursting.

## 5. Arc Lamp Installation

### WARNING:

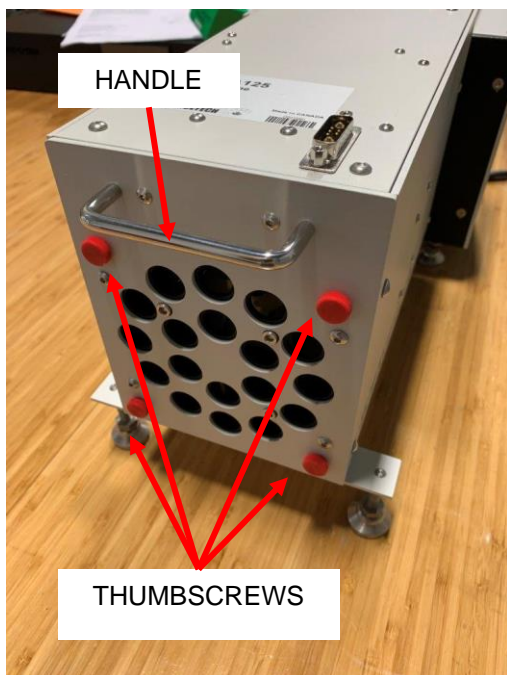
Do not operate the A4 LightLine power supply above 500W unless the air mass filter is installed in the system. Failure to do so may result in damage to the optical fiber.

Do not operate the AX LightLine without the air mass filter installed in the system. Failure to do so may result in damage to the optical fiber.

### 5.1 LH Arc Lamp Installation (A1 and AX LightLine)

Always take proper safety precautions when handling arc lamps. Read the safety section before installing an arc lamp.

1. All personnel installing an arc lamp should wear personal protective equipment as outlined in section 4.1. Refer to Section 4 for proper handling of the bulb.
2. Remove the four thumbscrews on the back of the lamp housing

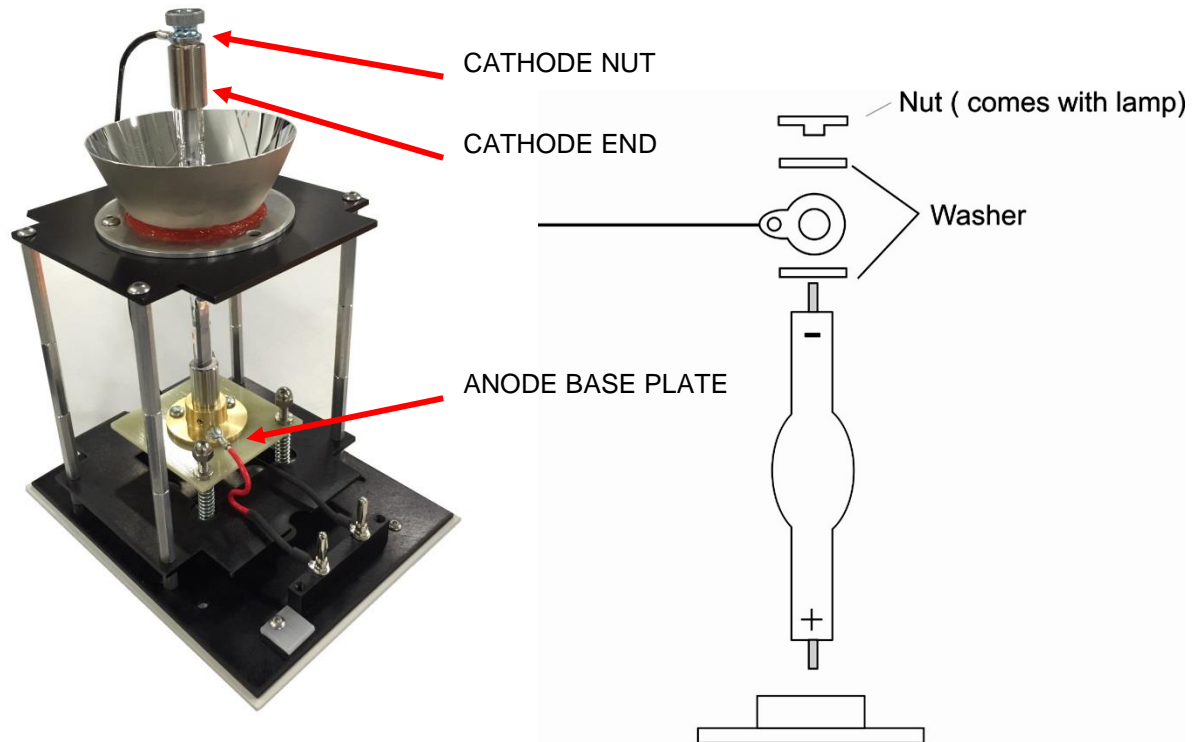


Using the handle, pull directly away



3. Very carefully pull the top off of the lamp housing. The top of the lamp house should be pulled directly upwards. There is a puzzle piece shape attached to the lamp house top plate and must be pulled directly upwards or it will not fit through the exit opening. The lamp may be positioned extremely close to lenses inside the lamp house.
4. Refer to Section 4 for proper handling of the bulb.
5. Install the lamp by screwing the anode (+) into the brass base. **Hold the lamp by the anode base as you screw the lamp into place** to avoid placing stress on the glass envelope of the lamp.
6. Attached the cathode wire (black wire with round washer/lug) to the cathode end of the lamp. Secure the cathode wire lug to the lamp cathode with the included nut (washers not

included or needed on all models).

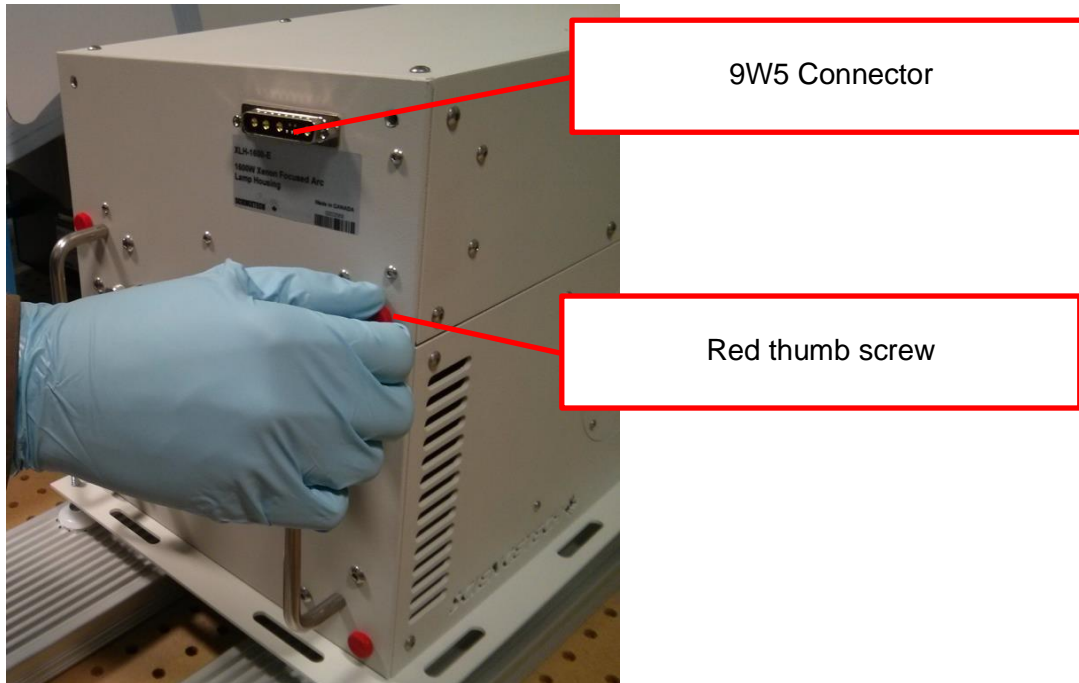


7. Screw the nut tight with your hand while supporting the lamp cathode against the turn so that no stress is transferred to the glass.
8. Ensure PROPER POLARITY of the lamp (i.e. RED to ANODE and BLACK to CATHODE).
9. For a new lamp installation you may need to align the lamp. Use the following alignment procedure. **NOTE: If your system is being shipped from Sciencetech with a lamp then you will not need to align the lamp, it has been done for you at the Sciencetech factory.**

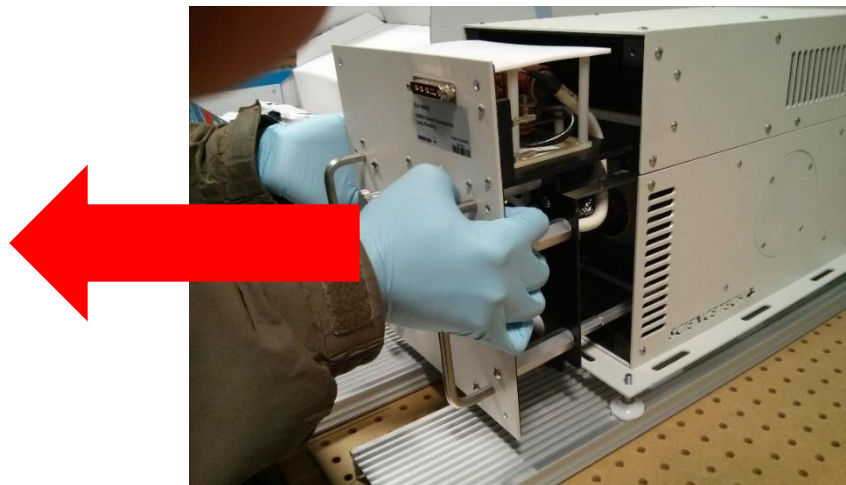
## 5.2 XLH Arc Lamp Installation (A4 LightLine)

**Always take proper safety precautions when handling arc lamps. Read the safety section before installing an arc lamp.**

1. Ensure the power supply is OFF and unplug the 9W5 lamp house power cable.
2. Remove the 6 red thumbscrews on the back panel.



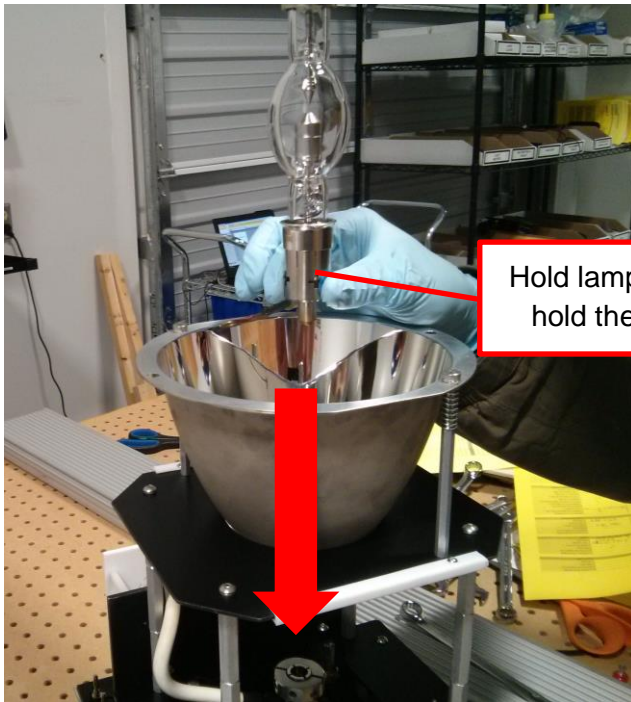
3. All personnel installing an arc lamp should wear personal protective equipment as outlined in section 4.1. Refer to Section 4 for proper handling of the bulb.
4. Gently pull out the lamp / reflector assembly using the two handles on the back panel; the panel may be very snugly mounted so care is needed in this step.



5. Lay the lamp / reflector assembly on a flat surface with the reflector pointed upward.



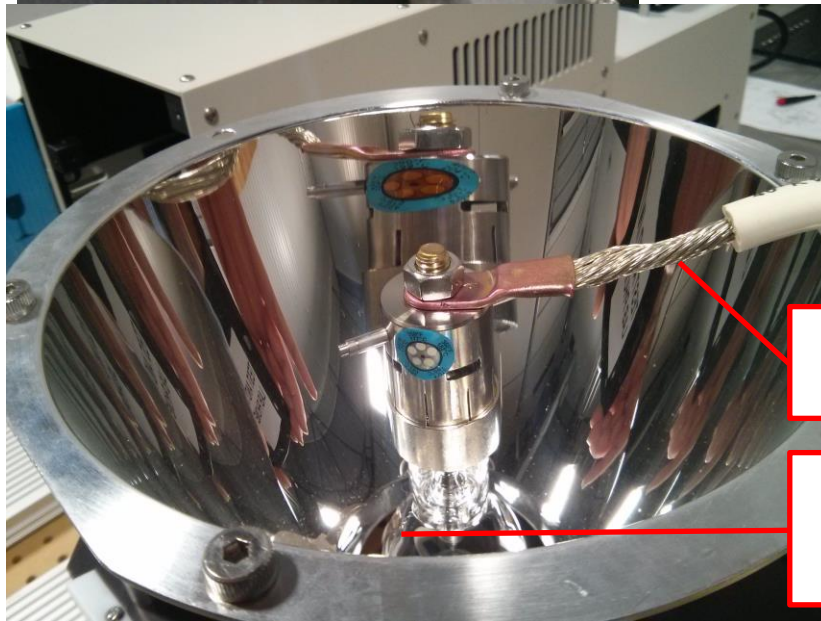
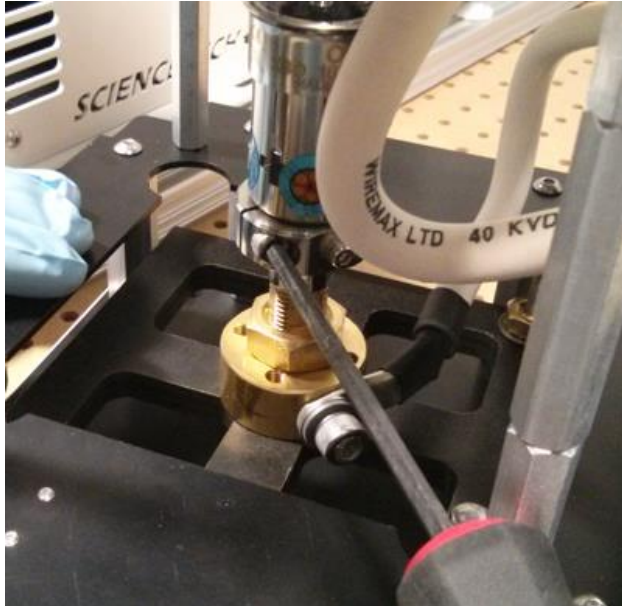
6. Wearing a **full face-shield and gloves**, insert the lamp through the reflector, +ve (anode) end down. Be careful to grip the lamp well at the top -ve (cathode) end on the metal collar ONLY. DO NOT TOUCH THE LAMP GLASS. Using your other hand, carefully guide the lamp through the reflector and seat the anode end into its socket.



Hold lamp only on the metal ends, do not hold the lamp by the quartz envelope.



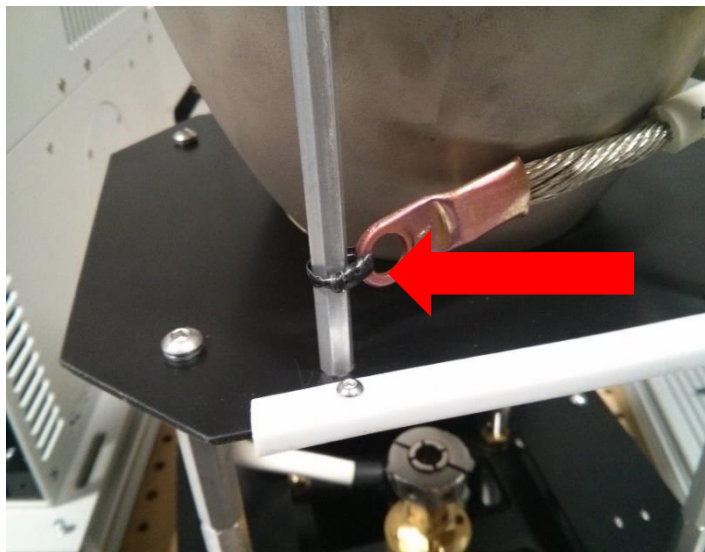
7. At the anode socket, use a 5/32 Allen key / driver to gently tighten the collar around the metal anode of the lamp. Align the ignition wire (attached to the bulb envelope) with the cathode wire. Do not at this point tighten the collar snugly; leave a bit of play, for the next step.



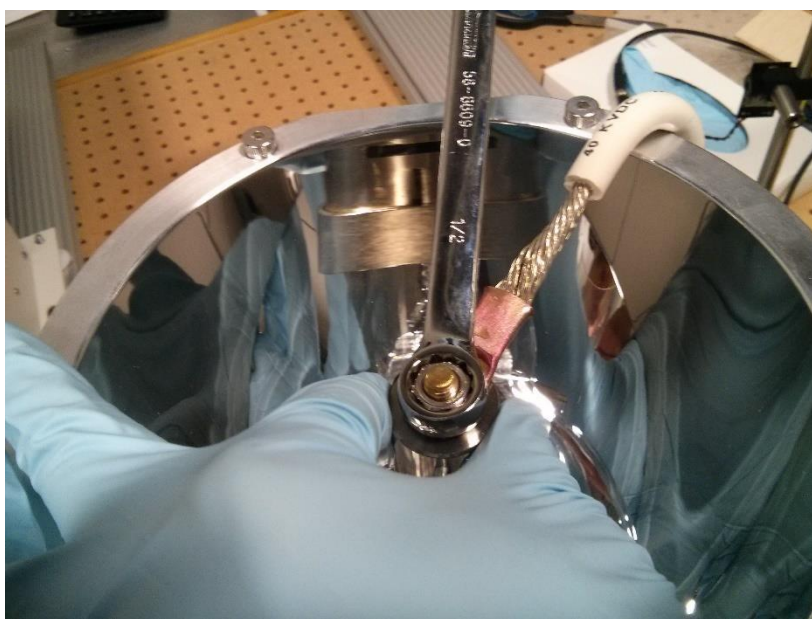
Cathode wire

Ignition wire not aligned,  
rotate to be in-line with  
cathode wire.

8. Untie the cathode wire from the reflector mounting post.



- Put the copper eyelet of the cathode wire onto the threaded portion of the lamp. Again, do not touch the glass. Next, screw the provided nut on finger tight while holding the metal collar of the lamp cathode. Finally, very carefully tighten the nut, while gripping the collar tightly; you do not want to put ANY stress on the quartz envelope part of the lamp itself as it has very high pressure Xe gas inside and can explode violently. If a thumbnut is provided, tighten the thumbnut as tight as possible with just your fingers.



- Now tighten the anode socket collar at the base of the lamp, as shown above in Step 7.
- Insert the reflector / lamp assembly back into the lamp house, which is the reverse of Step 3 above. Finally, re-install the four red nylon capped screws to secure the back panel to the lamp house (see Step 2).
- Lamp removal is the reverse of installation.

### 5.3 Fiber Installation (A1 and A4 LightLine)

1. Carefully insert the end of the fiber with the 1-inch diameter lens tube and slip ring into the mounting port as shown below. Line up the slip ring/adaptor plate and port mounting holes. A 2 mm driver will be required to attach the lens tube, slip ring, and mounting plate to the LightLine assembly.



2. Using a 2.5 mm Allen key, insert all four screws into the slip ring and tighten them. Do not loosen the slip ring that is tightened around the lens tube. It is secured to maintain the aligned position of the fiber inside the lamp housing.



### 5.4 Filter Installation

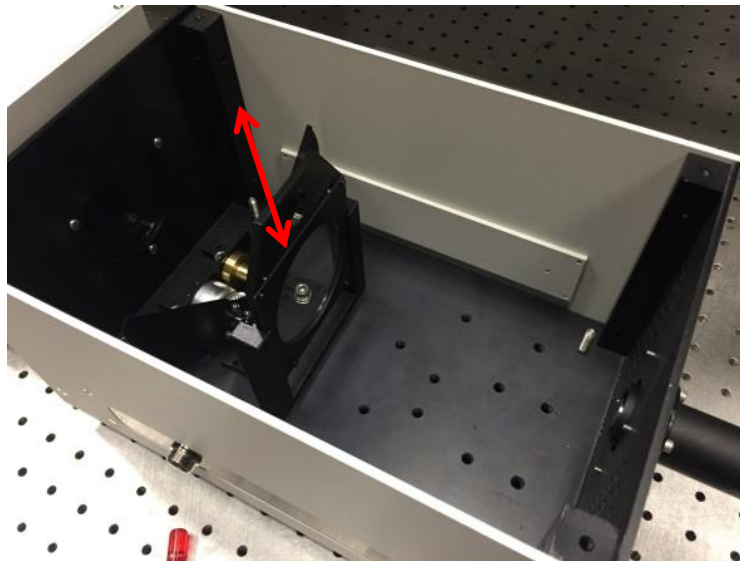


Filters are installed in the illuminator housing by removing the lid. In the A4 and AX LightLine, a cooling fan is attached to the lid and there is an electrical disconnect that needs to be detached to fully remove the lid.

1. Remove the illuminator housing lid by removing the four M4 screws with a 2.5 mm Allen key (or 4 red button head screws).



2. Filters are installed in the provided holder by sliding the filter into one of the two filter holder slots. A spring loaded ball plunger in the filter holder locks the filter in place.



## 5.5 Arc Lamp Alignment Procedure

# !STOP!

**If you have just received a LightLine from Sciencetech you SHOULD NOT align the lamp.**

The lamp position has been aligned for you at the Sciencetech factory. If you are replacing an old lamp you may need to align the new one, follow the procedure below if required. Once again, all systems are factory aligned at Sciencetech.

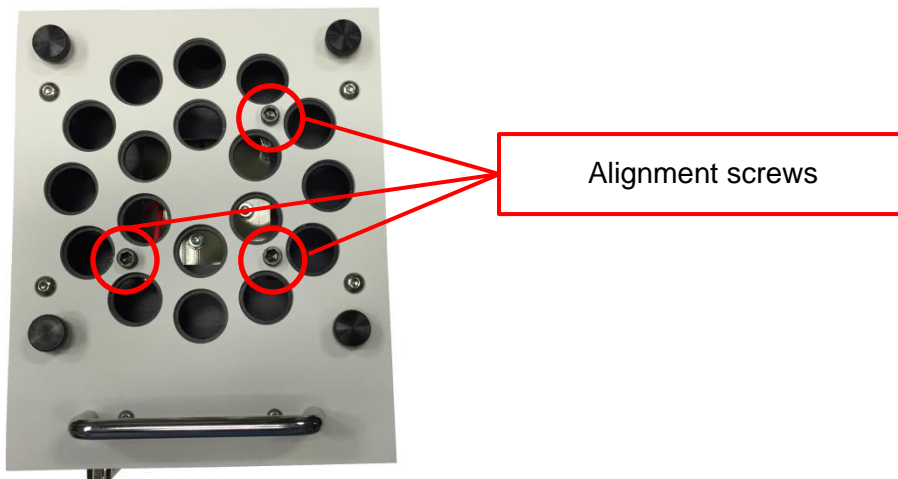
Place the LH lamp housing on a flat surface before aligning the bulb and reflector.

### 5.5.1 LH-E Lamp House Alignment

#### **WARNING:**

**UV eye protection such as UV sunglasses must be worn when adjusting the lamp focus.**  
**Do not place hands or combustible material in the focus of the light beam.**

To align the arc lamp in the LH housing, place a power meter (or other suitable detector) at the target plane of your system. Make small adjustments to the alignment screws with a 9/64" Allen driver to maximize the power (or signal) at the target plane. Once a maximum power is reached, your arc lamp is aligned.

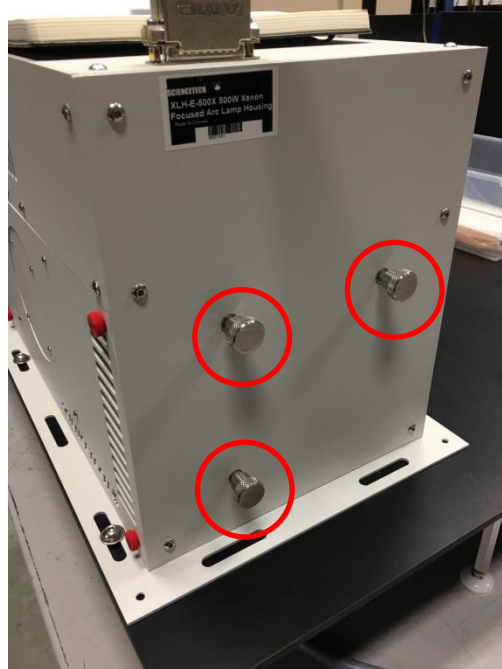


#### **WARNING:**

**Make only progressive ¼ turn adjustments on each of the screws at a time. Larger turns will place excessive stress on the lamp and the lamp could explode as a result. Be sure to turn all three screws the same amount in the same direction.**

## 5.5.2 XLH-E Lamp House Alignment

If your lamp house contains an elliptical reflector, alignment is completed by adjusting the three metal thumbscrews on the rear of the lamp house.



Place a target, such as a black metal plate at the focused location of the lamp house (focus length varies depending on lamp house configuration) and adjust the 3 thumbscrews to produce a small symmetric focus. If your lamp house is coupled to a secondary optical system, the power at the output plane can be monitored as the lamp house alignment is adjusted to produce a maximum power at the target plane.

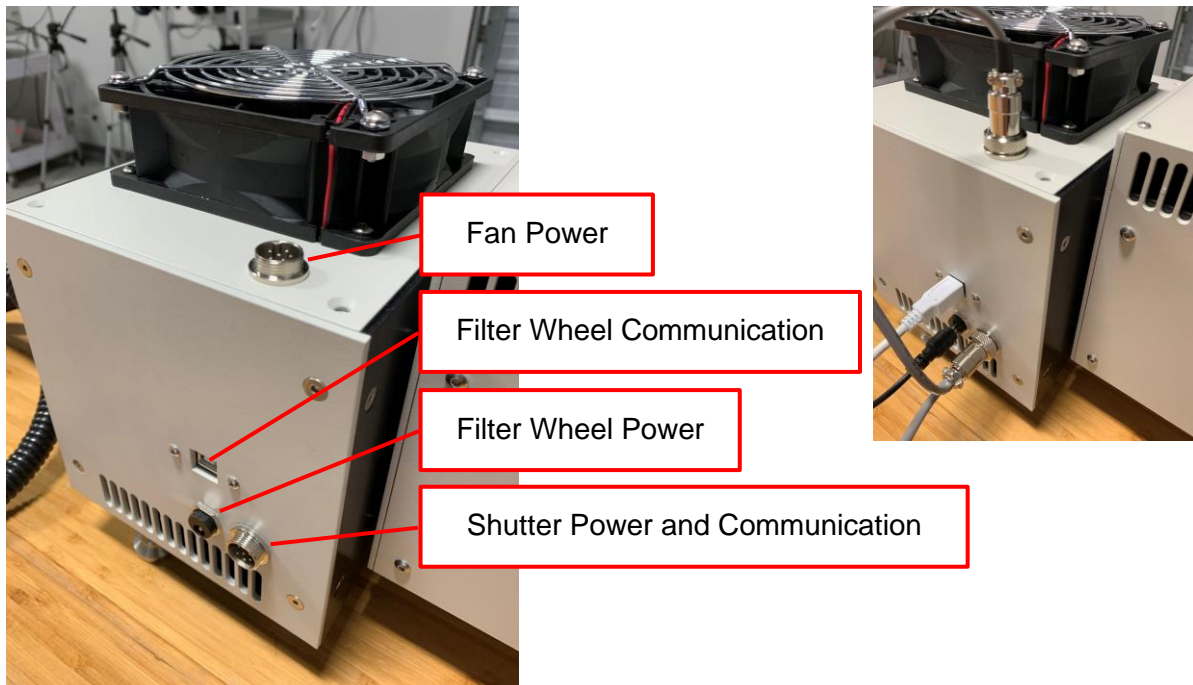
## 6. Accessories Hookup

Depending on your system configuration, other connections are required to control and power accessories such as a filter wheel and fans.

### 6.1 Filter Wheel Hookup

1. Connect the USB communication port to the computer to control it with the provided USB A to B cable.
2. Connect the provided 24V brick power supply to the filter wheel power port.
3. If supplied with your system: connect the two ended 6-pin cable from the rear of the power supply to the shutter power and communication port and the fan power port. Not all system (A1 LightLines will not) have a fan connection on the system as shown below.

AX LightLine variant shown below.



**Please see the accompanying software user manual for filter wheel operation.**

## 7. Power Supply Description and Operation

### 7.1 Configuration of 601 and 611 Series Power Supplies

601-/611-		
Specification		
Safety interlock for external lamp house		/SF
Programmable remote temperature monitor		/TM
Power connection for external lamp house cooling fans		/PF
Integrated shutter and exposure controller		/SH
RS232 computer control		/RS
WiFi computer control		/WF
Monitor output for monitoring power supply status		/OC
Auto Start lamp		/AS

**Example:** 601-1K/SF/TM/RS is a 601 series power supply with wiring for a safety interlock, a remote temperature monitor and RS-232 computer control.

### 7.2 Description of Configurations

#### **/SF** Safety Interlock

The safety interlock is wired into the power supplies standard DB15 connector that connects to a Sciencetech lamp house. The interlock wiring can be connected to a mechanical safety interlock such as a magnetic switch or rocker switch on the lamp house. With the safety interlock option the power supply will turn off if the interlock is opened thereby extinguishing the lamp. This helps ensure safety of the lamp house operator.

#### **/TM** Programmable Remote Temperature Monitor

The programmable remote temperature monitor option provides over temperature protection for the lamp house that the power supply is being used with. With this option an RTD or K-type Thermocouple is wired between the lamp house and power supply through the lamp house DB15 connector. A programmable temperature sensor with relay output is used to program a maximum lamp house temperature. This option ensures that if the cooling fans fail or the temperature inside the housing rises to a dangerous level the power supply will be shut off extinguishing and saving the lamp from catastrophic failure.

#### **/PF** Power Connection for Cooling Fans

This option provides a power pass through connection for the lamp house cooling fans. Without this option lamp house cooling fans must be plugged in to their own plug points and their operation is not monitored by the lamp house. With this option the lamp house cooling fans are plugged into the power supply. When the power supply is turned on the lamp house fans will also turn on automatically. With this option when the lamp is extinguished from the power supply control panel the power supply will run the fan for 10 minutes to cool the lamp house before turning off the cooling fans.

#### **/SH** Integrated Shutter and Exposure Controller

This option provides an onboard shutter and exposure controller built into the power supply. A standard 2-pin connector is provided on the back of the power supply to connect a Sciencetech solenoid driven shutter mechanism. With this option the power supply firmware provides an interface for programming shutter loops and exposure sequences.

#### **/RS** RS232 Computer Control

This option provides RS232 computer control of the power supply through a DB9 connector mounted on the rear panel of the power supply. With this option the power supply current output and lamp On/Off can be controlled from a remote terminal. Basic terminal software is provided with this option with instructions on how to operate the power supply remotely.

#### **/WF** WiFi Remote Operation

This option provides remote control of the power supply through a wifi connection. With this option the power supply current output and lamp On/Off can be controlled from a remote terminal.

#### **/OC** Monitor Output

This option provides a male nine pin connector on the rear of the power supply for monitoring the status of the power supply. Parameters that can be monitored: Lamp current 0-10V, Lamp voltage 0-10V, Lamp On/Off 1-5V TTL.

#### **/AS** Auto Start Lamp

This option provides the capability to automatically start the lamp. This allows the user to set a time for the solar simulator to automatically ignite. See Setting System Time section for instructions.



## 7.3 Making Connections

### 7.3.1 601- Power Supply Connections

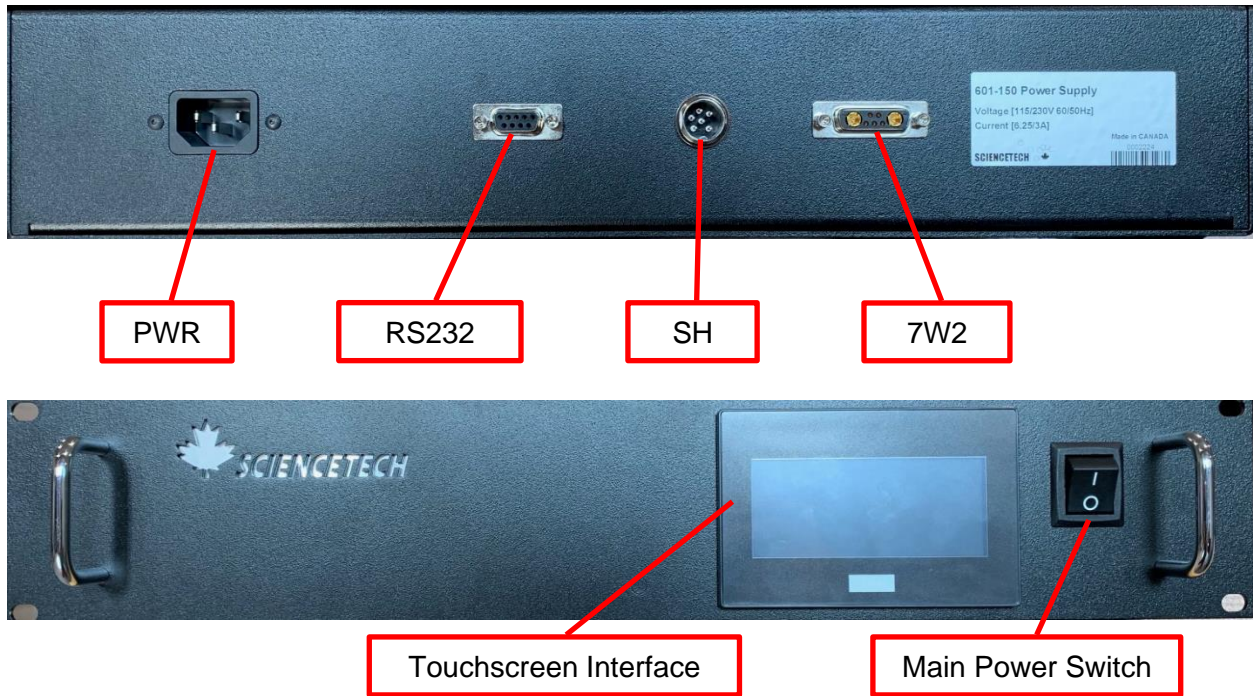


Figure 1 : 601 series power supply with connections labelled.

LABEL	DESCRIPTION	601 SERIES	CONNECTOR
PWR	Power Input (120V OR 220V AC)	Y	IEC 320-C14
RS232	Serial input for Computer Control. The other end of this cable is a USB for interfacing with the Power Supply Control Software.	Y	DB9 Female
SH	Shutter Control and Accessory Fan Power	Y	6-pin Mode
7W2	Power to Lamp and Cooling Fans	Y	7W2

Table 1 : Label acronyms, descriptions and connector types explained.

Plug the provided 7W2 cable into the 7W2 connector on the lamp house and power supply unit. Plug line cord into PWR (100-130VAC OR 200-230VAC depending on model of supply) and to the appropriate wall outlet. Plug the RS232 into the RS232 connector of the power supply and the other end to a USB port on your computer.

Optional: If you purchased an electromechanical shutter. Connect 2 or 6 pin shutter cable to SH. Shutter is usually located inside of a lamp house or solar simulator.

### 7.3.2 611- Power Supply Connections



LABEL	DESCRIPTION	611 SERIES	CONNECTOR
PWR	Power Input (120V OR 220V AC)*	Y	IEC 320-C14
RS232	Serial input for Computer Control	Y	DB9 Female
SH	Shutter Control and Accessory Fan Power	Y	6 Pin
9W5	Power to Lamp and Cooling Fans	Y	9W5
MO	Monitor Output	Y	DB9 Male
TM	Temperature Monitor	Y	3 Pin

Plug the provided 9W5 cable into the 9W5 connector on the lamp house and power supply unit. Plug provided line cord into PWR (100-130VAC OR 200-230VAC depending on model of supply) and to the appropriate wall outlet.

Connect RS232 DB9 connector to a computer for software control of the power supply (if included). Connect 6 pin shutter cable to the corresponding connection on an accessory for fan power or electronic shutter (if included). Connect the provided 2 pin temperature monitor cable to the side of the lamp house and rear of the power supply (if included). Connect a DB9 cable to the monitor output to a desired analog reading device (if included).



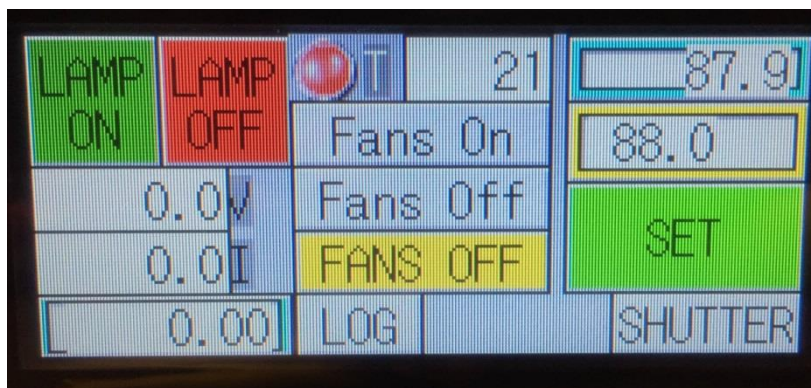
## 7.4 Power Supply Start-up



With all connections made by following the Setup Procedure turn the power supply on using the switch on the front of the power supply.

You will hear the fans and power supply activate. If this does not happen ensure all connections are made correctly. If they did start press **OK** on the starting screen.

### 7.4.1 Understanding the Main Screen



### 7.4.2 Starting the Lamp

Ensure all connections have been made according to instructions in this manual. Press the Fans On button to turn on the fans on the lamp housing. Ensure the lamp housing fans have started. Running the lamp without turning on the lamp housing fans will result in overheating. The FANS ON/OFF should now display that the lamp housing fans are on.

You may now press the LAMP ON button to ignite the lamp. The power supply has a pre-set ignition voltage that will be less than the max current for your bulb. Using the yellow UP and DOWN arrows on the right of the touchscreen you can set the proper power level by hitting the green SET button below. Adjusting the number displayed does nothing until the green SET button is pressed. To turn the lamp off simply press the LAMP OFF button. A Pop up window will warn that the fans will continue to operate for 1-5 minutes before shutting off.

### 7.4.3 Touchscreen Button Overview

**LAMP ON** – Turns on arc lamp

**LAMP OFF** – Turns off arc lamp

**V** – Displays present lamp voltage

**I** – Displays present lamp current

**P** – Displays present lamp power

**SHUTTER** – Brings up the shutter control screen

**Fans On** – Turns on lamp housing fans, always turn on the lamp housing fans before igniting a lamp

**Fans Off** – Turns off lamp housing fans, always let lamp housing fans run for a few minutes after turning off the lamp

**FANS OFF** – Displays the present state of the lamp housing fans

**87.9 [BLUE BOX]** – If the lamp is running, this box displays the present lamp current percentage. In the example below if the lamp were on, it would be operating 87.9% of its maximum current.

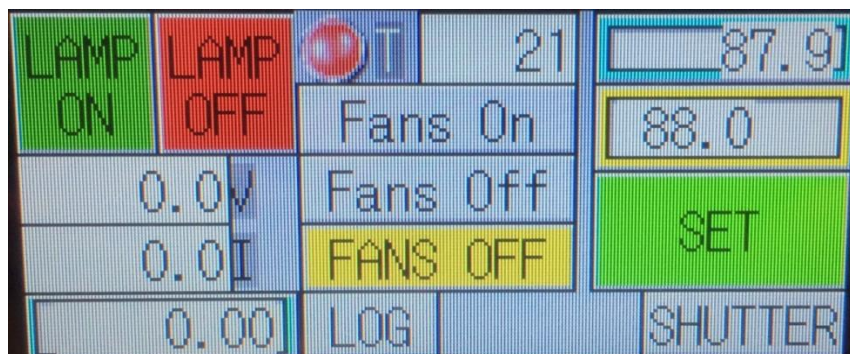
**88.0 [YELLOW BOX]** – To set a new current percentage for the lamp to operate at click this box. A popup window will appear and will allow you to type in a new value to operate the lamp at. Once complete, press enter on the popup window. The change will not take effect until the GREEN SET button is pressed.

**SET** – Press this button to apply the current percentage value in the YELLOW BOX to the arc lamp, this change will be reflected in the BLUE BOX that displays the current percentage the lamp is operating at. In this example the lamp would be set to 88.0% if the GREEN SET button is pressed.

**LOG** – Opens the log screen with lamp and power supply run time information.

**T** – Displays time since lamp turn on

**INDICATOR LIGHT** – If the light is RED, the lamp is off, if the light is GREEN the lamp is on



#### 7.4.4 Shutter Control



From the main window select the shutter button at the bottom of the screen.

This window has 7 functions:

1. Allow to stop the lamp if needed.
2. Manually open and close the shutter
3. Set a loop time or expose time.
4. Start a “1-shot” exposure.
5. Start a continuous loop timer that opens and closes the shutter
6. Visually display if the shutter is open or closed
7. Access back to the Main Screen, or the Runtime screen.

To manually open and close the shutter use the top left button. To use the Loop or Expose function, select the larger box on the left to access a pop up window that allows a value of seconds to be entered as the “Open Value”, repeat this step to the large box on the right to set the “Close Value”. Once time is set close the shutter.

Press the Expose button once and it will open the shutter for time entered in the “Open Value” window. Press the Loop button once to start a loop of and Open/Close stated timed by the two values. Press again to deactivate the loop.

#### 7.4.5 Run Time Window

To access this window press the “RUN TIME” button on the bottom of either the main screen or shutter screen.

This window has 5 functions:

1. Stop the lamp if required
2. Display the total amount of time the power supply has run lamps.
3. Display the time the current lamp has run
4. Show the total amount of lamp starts the power supply has performed
5. Reset the lamp hours and minute when a new lamp is installed
6. Allow access back to the main screen or shutter screen

#### 7.4.6 Setting system time

1. Turn on power supply
2. Click OK for startup screen
3. Click "Auto Start"
4. Click "By Clock"
5. Touch top left of screen for 5 seconds for a setup menu to pop up. (this is where the hours number is)
6. Click "system Mode" it will now turn off
7. Click "Main Menu"
8. Click "Clock Setting"
9. Fix each value by typing the number in and pressing "ENT" then press --> to go to next from year, month, day, hour, minute, second. Click "Save"
10. Go back to "main menu" tab top left
11. Click "Run"
12. Unit will now restart

## 7.5 RS232 Output

For more information on the RS232 communication see the Power Control User Manual.

Pin	Description
1	Data Carrier Detect
2	Received Data
3	Transmitted Data
4	Data Terminal Ready
5	Signal Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

## 7.6 Notes on Voltage Selection

The power supply power entry module can be configured to accept 120VAC or 220VAC power input. Be sure to check that your power supply has been configured properly for your local line voltage before plugging in the supply. Before re-configuring your supply be sure to check the technical specifications of your supply to ensure that the input voltage you want to configure is listed.

## 7.7 Notes on Fuses

The fuse drawer holds two fuses. Use 250V slow blow fuses only.

## 7.8 Notes on Cords

Depending on your location a power cord has been supplied for you\*.

Part Number	Region	Style	Expected Line Voltage
-------------	--------	-------	-----------------------

040-9001	North America	Type B	110VAC
040-9002	China	Type I	230VAC
040-9003	India	Type M	230VAC
040-9004	Europe	CEE 7/7	230VAC
040-9005	North America	Nema 6-15P	230VAC

For regions not listed your cable type may not be available.

## 8. Important Notice

All electrical instruments may be dangerous if not handled in accordance with proper instructions and common precautions. Sciencetech Inc. will not be responsible for any damage caused by such units if instructions herein are not followed and repairs are not attended to or performed by company-trained or licensed personnel. All instruments should be operated with proper grounds on power line and should not be opened or handled as to electrical or electrically operated components without being switched off and disconnected from power receptacle.

Sciencetech Inc. reserves the right to make adjustments or improvements in its product without notice and without obligation to subsequent purchasers and without being required to make corresponding changes or improvements in products theretofore manufactured and sold.

We have done our very best in the manufacture and packing of this material. The transportation carrier is now responsible for delivering it to you in its original good condition, since all purchases are FOB London.

If the shipment is NOT delivered in good order and in accordance with quantity shown on Bill of Lading or Packing Slip, have the shortage or damage noted by the Carrier on both the delivery receipt and the freight bill, or by special form provided by United Parcel or the Post Office.

The Interstate Commerce Commission has ruled that Transportation Companies will not honor any losses or shortage claims unless exceptions are noted on the freight bill at the time of delivery. It is the buyer's responsibility to make a complete inspection immediately upon receipt of purchased goods.

If you accept shipment from the Transportation Carrier short of what is enumerated on the Bill of Lading – or in damaged condition – without having proper notation made by the Carrier, you do so at your own risk.

If bundles or crates are in apparent good order, but on opening contents are found to be damaged, call Carrier for adjuster to view same and have the Transportation Company/United Parcel/Post Office mark the freight bill or packing slip relative to such concealed damage. Make your claim at once for the Transportation Company/United Parcel/Post Office has a limited time for presentation of claims.

We are willing to assist you in every possible manner in collecting claims for loss or damage on this shipment, but this willingness on our part does not make us responsible for filing or collecting claims or replacing materials. Claims for Loss or Damage on shipment may not be deducted from out invoice, nor pay of the invoice withheld awaiting adjustment of such claims, as we cannot guarantee safe delivery.

**Important:** Do not return goods without written authority.

Contact factory for return material authorization.

Returned goods will not be accepted by us from the Transportation Company/United Parcel/Post Office unless written authorization has been issued by Sciencetech Inc.

Return of special or non-stock items cannot be authorized. Credit for goods returned - under authorization - will depend on the value to us based on our selling price, less a fair charge to cover the expense of shipping - re-handling - transportation - refinishing, etc, providing material is received in good condition - transportation charges prepaid - credit rendered to be used against future purchases.

All equipment manufactured by Sciencetech Inc. has been subjected to extensive performance and quality control testing. In order to constantly improve our product, we ask your assistance. Upon installation of our equipment, please fill out the attached card and return to us.

By completing the card and returning it to Sciencetech, you will register your instrument in warranty and enable us to provide you with the best possible service.

## 9. Warranty and Assistance

All Sciencetech products are warranted against defects in materials and workmanship. This warranty applies for one year from the date of delivery, or, in the case of certain major components listed in the operating manual, for the specified period. Products sold or resold, but not manufactured by Sciencetech, carry the warranty, if any of the original manufacturer. We will repair or replace products that prove to be defective during the warranty period or employ our best efforts to effect repair or replacement of equipment sold, but not manufactured, by Sciencetech. No other warranty is expressed or implied.

We are not liable for consequential damages.

Telephone: 519-644-0135

Fax: 519-644-0136

Email: [sales@sciencetech-inc.com](mailto:sales@sciencetech-inc.com)